

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

August 17, 1922

ORIGINAL ARTICLES.

| | |
|--|-----|
| THE DIAGNOSIS OF DISEASES OF THE URINARY TRACT. By William C. Quinby, M.D., Boston..... | 229 |
| DIAGNOSIS OF EARLY BREAST TUMORS, BASED ON THEIR CLINICAL PICTURE OR THEIR GROSS AND MICROSCOPIC PICTURE AT THE EXPLORATORY INCISION. By Joseph Colt Bloodgood, Baltimore, Md..... | 243 |
| DISCUSSION OF DR. BLOODGOOD'S PAPER..... | 256 |
| VARICOSE VEINS AND ULCER: METHODS OF DIAGNOSIS AND TREATMENT. By John Homans, M.D., F.A.C.S., Boston..... | 258 |
| PRESENTATION OF A HAS-BELIEF OF PROFESSOR D'ESPÈRE TO THE BOSTON MEDICAL LIBRARY. John W. Farlow, Boston.... | 266 |
| EDITORIALS. | |
| THE ELECTRONIC REACTIONS OF ARRAYS..... | 268 |
| ANTIVACCINATION LECTURE BY RADIO..... | 270 |
| PHYSICIANS IN CONGRESS..... | 271 |
| NEWS ITEMS..... | 272 |

MISCELLANY.

| | |
|--|-----|
| MEDICAL RESEARCH IN AMERICA..... | 272 |
| THE LEGAL OWNERSHIP OF A SKILL..... | 272 |
| WISCONSIN BARS GET FILLED MILK..... | 273 |
| LIFE TABLES FOR STATES AND CITIES, 1920..... | 273 |
| AFTER-EFFECTS OF WARFARE GASES AND THEIR RELATION TO TUBERCULOSIS..... | 274 |
| BABY HYGIENE ASSOCIATION..... | 275 |
| INSTRUCTIVE DISTRICT NURSING ASSOCIATION..... | 275 |
| INCORPORATION OF THE AMERICAN SOCIETY FOR THE CONTROL OF CANCER..... | 276 |
| CURABILITY OF INSANITY..... | 276 |
| EXCERPTS FROM THE UROLOGIC AND CUTANEOUS REVIEW..... | 276 |
| RED CROSS NOTES..... | 277 |
| THE SCARLET FEVER GERM..... | 277 |
| MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION..... | 277 |
| AMERICAN RELIEF ADMINISTRATION..... | 278 |
| AWARD OF THE CHARLES G. MICKEL FELLOWSHIP..... | 278 |
| RECENT DEATHS..... | 278 |
| DISEASES REPORTED TO MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH..... | 278 |

Original Articles.

THE DIAGNOSIS OF DISEASES OF THE URINARY TRACT.*

(WITH ESPECIAL REFERENCE TO THE COMPARATIVE VALUE OF THE VARIOUS DIAGNOSTIC DATA).

By WM. C. QUINBY, M.D., BOSTON.

[From the Urological Clinic of the Peter Bent Brigham Hospital.]

IN no branch of major surgery are the methods of arriving at an accurate pre-operative diagnosis so numerous and so reliable in their detailed findings as are those which are applied to diseases of the urinary tract.

During the past fifteen to twenty years much progress has been made, so that the older teachings in many respects have had to be modified. For instance, it is well recognized today that the classical description of renal colic, the so-called Dietl's crisis, of pain sharp and cutting, referred downward from the kidney region along the course of the ureter to either the testicle or vulva, may hold true of one patient, while in another, bearing identical lesions, this type of pain may be absent or greatly modified. Or, again, in regard to the conclusions to be drawn from the examination of the urinary sediment, much stress used to be placed on the finding of

pus in clumps, or of caudate cells, or of the so-called compound-granule cells, as characteristic of different portions of the urinary passages. Now we know that such details as these are quite valueless, it having become possible to localize diseases by other and much more accurate methods. Though the observation of patients regarding their own symptoms is well known to be often inaccurate, nevertheless, a careful history and general physical examination are still of as much importance as ever.

Concerning the analysis of the urine, the absence of albumen or its presence in varying amounts is of less significance by far than is the amount of urine excreted during twenty-four hours and the combined function of the kidneys as measured by the phenolsulphonethalein test. Formed elements in the sediment, such as pus, blood or casts, are of much more significance than are various types of fixed tissue cells or the occasional finding of crystals. Frequently the data from bacteriological investigation of the urine are of importance, especially as regards the presence or absence of tuberculosis.

Excluding, then, those findings in the urine which accompany the various nephropathies commonly classed as Bright's disease, the most important elements from the point of view of the urologist are pus and blood occurring either singly or combined. Either of these is an important finding, and its source must be carefully sought and identified by the usual diagnostic

*Presented before the Boston Surgical Society, April 3, 1922.

procedures. Indeed, too much stress cannot be laid on the fact that it is the duty of all physicians today to see to it that in every case of hematuria or pyuria, the source of such is accurately determined, at the earliest possible date following its appearance. Of no less importance is it, however, to recognize the fact that there exists a variety of ailments of the urinary tract in which the urine may be found to be absolutely normal. Therefore, if the urine contains positive evidence of disease this is important, but negative evidence by no means excludes.

Following the history, the physical examination, including blood pressure and renal function test, and the urinalysis, we come to the data obtained by the radiograph, and this leads to a discussion of the relative values and proper interpretation of such shadows as may be found in the x-ray plate. Since this is in its ultimate analysis only a graphic record of varying degrees of density, it frequently happens that shadows so found need confirmation before an absolute opinion regarding their significance can be expressed. If the suspicious shadow involves the bladder it can be confirmed by ocular examination of this organ through the cystoscope, while if it concerns the ureter or kidney the passage of leaded catheters into the ureters or the injection of a solution opaque to the x-ray into the kidney pelvis will be necessary. In other words, the finding in an x-ray plate of a shadow which is consistent with that of a ureteral stone, let us say, is not today sufficient evidence on which to advise and perform an operation for the removal of such stone until absolute confirmation of the shadow by accessory methods has been accomplished.

As regards the data to be derived from a simple x-ray examination of the urinary tract, then, we may say that they are of great importance in our diagnosis, but only when confirmed. When such data are derived from an examination which has been made after the renal pelvis and ureter have been outlined by opaque substances,—in other words, when accessory diagnostic methods have been added to the x-ray,—then the value of such data is paramount and incontrovertible.

On all data obtained by the use of the endoscope and cystoscope we may place definite reliance, limited only by the degree of experience of the observer. Instances of infection in urethra or bladder, as well as stone, diverticulum, or foreign body in the bladder, are easily recognized. In the differentiation between benign and malignant growths in the bladder cystoscopic data may be at times inconclusive, but if we remember that all the common bladder neoplasms are at least potentially malignant, and if we act accordingly, no great error will arise from this cause.

This is not always the case with those findings which result from attempts to investigate the

product of each kidney separately by the use of the ureteral catheter, though as a rule complete reliance can be placed on them. The commonest difficulty arises from the occasional inhibition of renal function caused by the passage of the catheter. This is not nearly so apt to occur if the kidneys are in a state of active diuresis at the time of the observation. To obviate this type of temporary anuria, therefore, the patient should have taken several glasses of water within the hour immediately preceding the cystoscopic investigation. A second minor difficulty occurs occasionally in those instances in which the microscopic examination of the urine collected through the ureteral catheter shows a few blood cells. These may be due to renal disease or they may have been caused by the trauma incident to the passage of the catheter. It is impossible to tell which is the case, so that their presence must be ignored; or if the matter seems important, a second observation should be made as a check on the first. With the exception of such minor considerations as these, the data obtained by the use of the ureteral catheter are reliable and of great value.

Lastly, those data which are obtainable by the injection of solutions opaque to the x-ray, in order to outline the urinary passages, just as the intestinal tract is outlined by the ingestion of barium or bismuth, are of the utmost importance and may frequently even be the only ones on which an accurate and proper diagnosis can be based. The pyelogram or ureteropyelogram is subject to no errors that I am familiar with except always, of course, those of misinterpretation, and this is very rare.

In our present stage of diagnostic knowledge as it concerns the urinary tract it is fair, I think, to suggest the following as working rules or postulates.

1. Do not rush to the use of such modern diagnostic aids as the cystoscope before having taken a detailed history of the patient and having made a thorough general physical examination.
2. Examine the urine, especially for microscopic amounts of pus or blood, but do not feel that if the urine is normal this fact excludes the possibility of disease in the urinary tract.
3. Look with the eye of a skeptic on all shadows in the plain x-ray plate which seem to mean lithiasis within the urinary passages until such shadows have been proven by further measures to be in fact within these passages.
4. The accurate and early determination of the exact source of pus or blood in the urine is imperative. This can only be satisfactorily accomplished by the use of the cystoscope and ureteral catheter.
5. The data to be learned by the pyelogram are frequently of the greatest importance. This procedure should therefore be carried out frequently, often as an aid in the elucidation of

the source of abdominal pain whatever its location.

To make some of the above points clear a consideration of the following cases will be of interest, especially as regards the importance of data obtained by means of the x-ray:

Bladder. A. X-RAY SHOWS SHADOWS.

(Raising question as to whether these are in the bladder or urinary passages.)

nancy. Cystoscopic examination of the bladder immediately showed that this organ was entirely free from stones and that the only pathological condition present of any consequence was cancer of the prostate. Thus the shadows in the x-ray plate were shown to be either phleboliths or calcified lymph nodes.

B. X-RAY SHOWS NO SHADOWS.

CASE 2. A man forty-nine years of age com-



FIG. 1.—Case 1.

CASE 1. A man seventy years old complained of the general symptoms of an obstruction at the neck of the bladder caused by the prostate. X-ray examination of the bladder had been made, in which numerous small shadows were found. Rectal examination had shown a condition of the prostate suggesting malignancy, and the patient had been given the diagnosis of cancer of the prostate, together with stones in the bladder, in spite of the fact that the urine was normal. Considered critically, of course, this might be true; or it was conceivable that the whole condition was due to prostatic calculi with accompanying induration of the prostate, a condition sometimes closely simulating malignancy.

Plained of hematuria. Plain x-ray plate of the bladder showed nothing abnormal, but on filling the bladder with a shadow-casting solution the presence of a diverticulum immediately became evident.

CASE 3. A man forty-five years old complaining of hematuria, together with undue frequency of urination, was examined by the x-ray and no abnormalities seen, but on filling the bladder, as in the previous case, we immediately found extensive defects in the bladder outline caused by the presence of multiple neoplastic growths.

Ureter. A. X-RAY SHOWS SHADOWS.

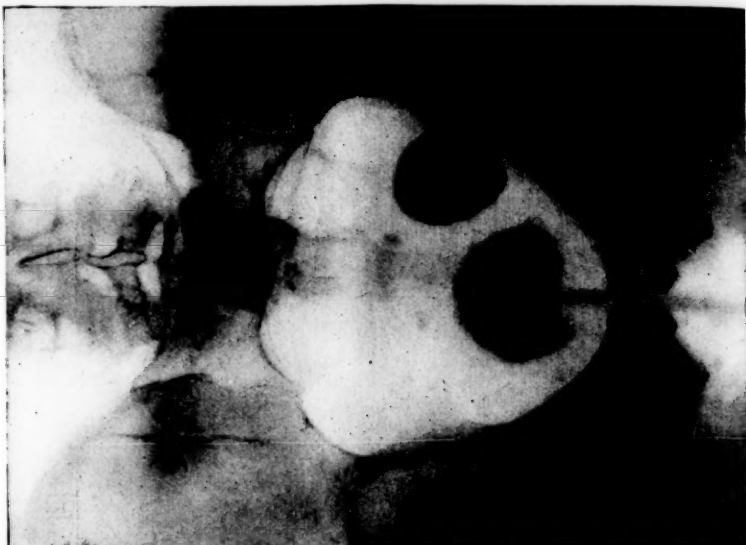


FIG. 2.—Case 2.



FIG. 2.—Case 2.

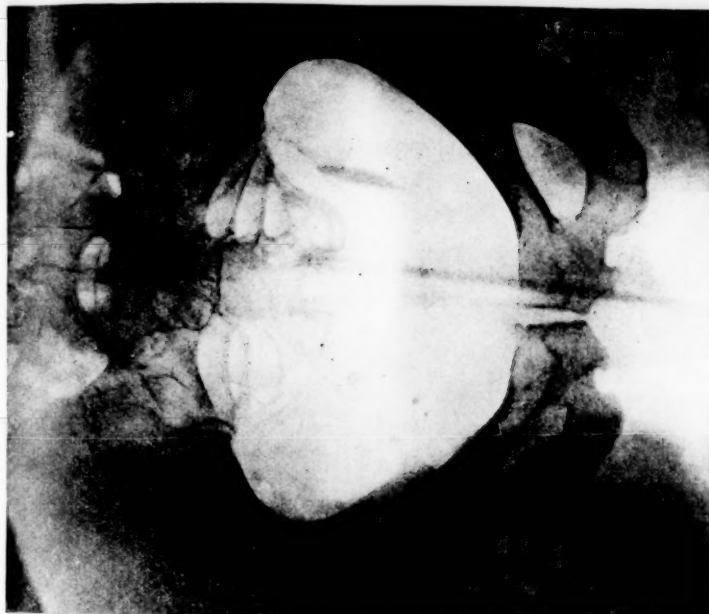


FIG. 5.—Case 4.



FIG. 4.—Case 3.



FIG. 3.—Case 3. HETEROMORPH. The clear area in the line of ligament beyond the catheter indicates the position of the obstruction. Note the dilatation of the ureter above the level of obstruction.

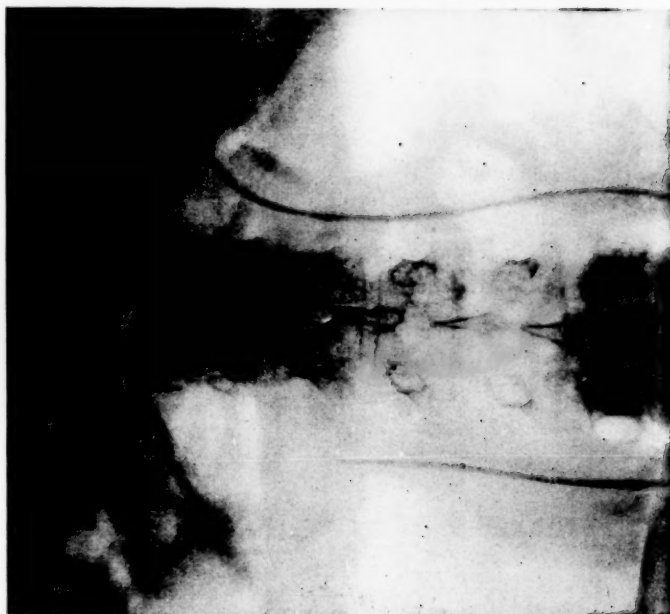


FIG. 4.—Case 4.



FIG. 8.—Case 6.

CASE 4. A widow, aged sixty-six, complained of pain in the right flank of one year's duration. Plain x-ray plate showed an elongated shadow lying low in the pelvis and very suggestive of calculus in the ureter. On passage of a wax-tipped catheter, in order to confirm this finding, the shadow was found to be transposed upward as far as the kidney region, thus proving without doubt and without the necessity of scratches on the wax-bearing catheter that this shadow was in fact cast by a ureteral calculus.

B. X-RAY SHOWS NO SHADOWS.

CASE 5. A man of forty-five complained of attacks of pain in the left flank suggestive of renal calculus. The plain x-ray plate showed no shadow, but the ureteral catheter did not pass up the left side, and injection of bromide solution showed a definite defect in the outline of the ureter, which was also confirmed by scratches on the wax-tipped catheter.

CASE 6. A single woman forty years old complained of a dull ache in the left side of the abdomen of two weeks' duration. On examination by a physician a mass the size of an egg was found which was freely movable and without tenderness. There were no other symptoms,

and investigation of the intestinal tract by x-ray failed to show any abnormality. The urine was normal, as was also the renal function. Examination of the region of the mass by the plain x-ray plate showed nothing abnormal, but following the injection of bromide solution there was seen a definite defect in the outline of the ureter over a considerable extent. This was subsequently shown by operation to be due to a tumor primary in the ureter.

Kidney. A. X-RAY SHOWS SHADOWS.

CASE 7. A single girl of twenty-seven complained of attacks of pain in the left flank at varying intervals over a period of ten years. The urine was normal on examination, as was also the renal function. X-ray of the region of the kidneys showed multiple shadows extending vertically along each side of the vertebral column. These were very numerous and undoubtedly represented the calcification following the healing of a previous *tuberculosis mesenterica*. It was not possible, however, from this plate to explain the cause of the patient's pain, but on filling the urinary tract with bromide solution it became evident that the left kidney was hydronephrotic, due to pressure caused by a group of these calcareous glands.

CASE 8. In another case, that of a man thirty-five years old who complained of a symptomless mass the size of an egg which he had found in his left hypochondrium, the plain x-ray plate showed shadows of a like nature. Certain of these shadows had been misinterpreted by the roentgenologist, so that the first report was "Hydronephrosis due to renal calculus." On injection of the kidney, however, the outline was found to be entirely normal, and at operation the mass was found to be a broken-down tuberculous lymph node on the anterior wall of the abdomen.

CASE 9. A man twenty-six years of age complained of a dull ache in the right side of the abdomen during the previous month. Together with this there was marked increase in the frequency of urination during the day, but no change in the periods at night. The physical examination was negative except for a few white blood cells in the urine. The total renal function, as well as the divided function, was normal, and it was not possible to find the tubercle bacillus in the urine. The plain x-ray plates showed various shadows which were quite ambiguous in size and arrangement, and which on first inspection seemed most probably to be situated within the intestinal tract. Investigation of the kidney after it had been filled with a solution opaque to the x-rays, however, showed a deformity of the lower calix of the kidney, and subsequent operation demonstrated an occluded tuberculosis of the lower pole of the kidney with lime deposits to which the shadows in the x-ray plate had been due.



FIG. 10.—Case 7.



FIG. 9.—Case 7.



FIG. 12.—Case 8.

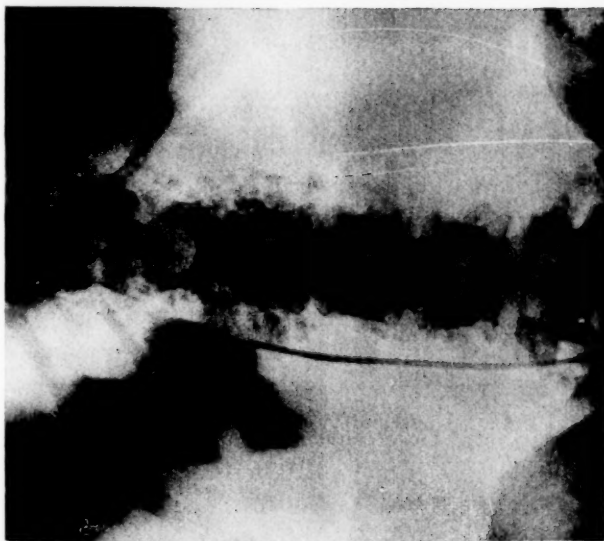


FIG. 11.—Case 7.

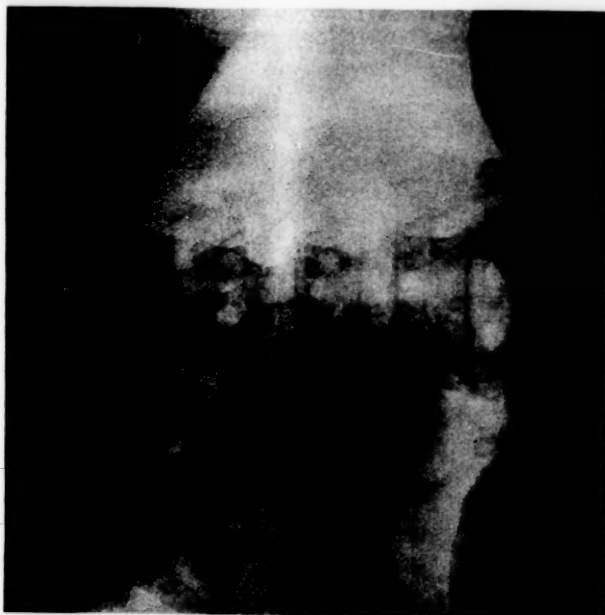


FIG. 14.—Case 9.



FIG. 13.—Case 8.

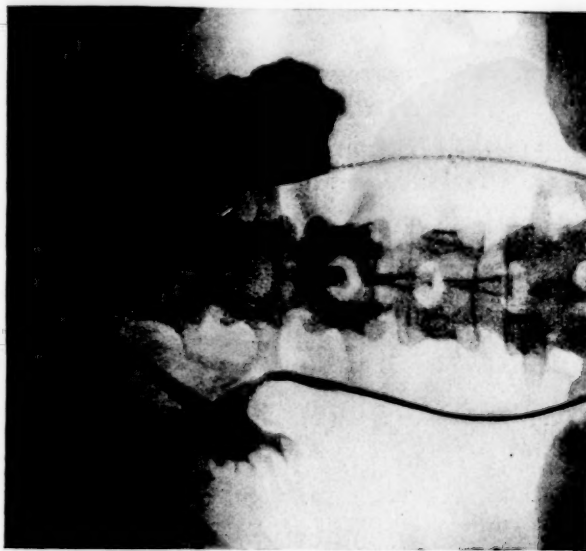


FIG. 16.—Case 10.



FIG. 15.—Case 9.

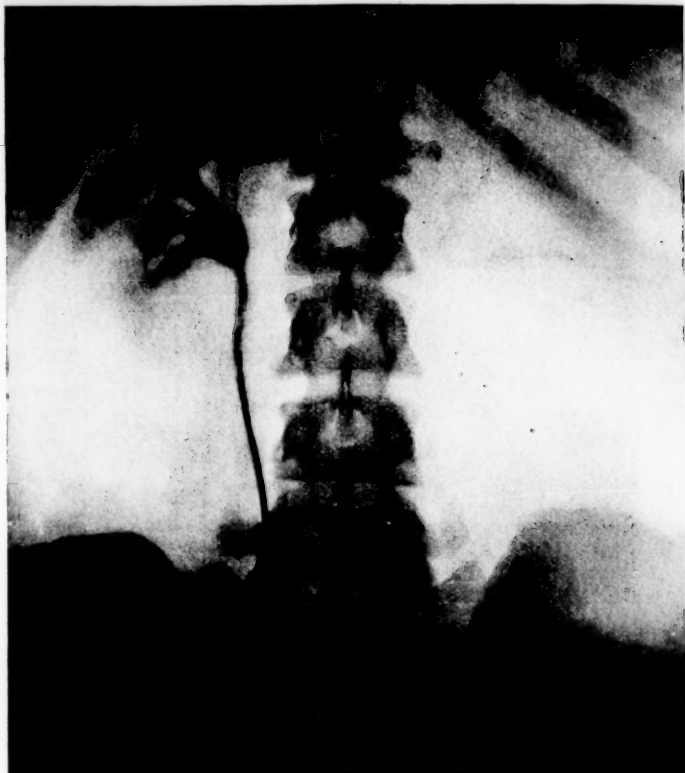


FIG. 17.—Case 11.

B. X-RAY SHOWS NO SHADOWS.

CASE 10. A girl of twenty-two complained of a dull ache in the right side lasting over a period of two or three years. She had been very carefully observed and never had any abnormality been found on physical examination except that at rare intervals the urine contained a very slight trace of albumen. Plain x-ray plate of the region in which the pain was experienced showed no abnormality. Injection of the kidney on this side, however, showed a large hydronephrosis, and subsequent operation demonstrated that this was caused by an abnormality of the blood supply to the kidney on this side, which caused obstruction to the outflow of urine by an artery which crossed the uretero-pelvic junction.

CASE 11. A married woman twenty-six years old complained of pain in the right side over a period of a year. At entrance to the hospital

she was having an attack of this pain with vomiting, but no chills or fever. The urine was normal except for a very rare white blood cell, and the total renal function was normal also. X-ray examination of the kidney and gall bladder failed to show any abnormalities, but on injection of the kidney the pelvis was found occupied by a clear space around which the bismide solution cast a more dense shadow. This clear space was subsequently shown to be in fact a good-sized stone lying in the renal pelvis and composed of pure cystin.

CASE 12. A woman twenty-six years old had had pain in the left lower quadrant of the abdomen and in the left leg, following a normal delivery eight months previous. These attacks of pain were severe and caused vomiting and confinement to bed. There was no fever or symptoms on the part of the bladder. Physical examination showed a small mass in the lower abdomen situated two or three fingers' breadth



FIG. 18.—Case 12.

below the umbilicus. On pelvic examination this mass could not be felt bi-manually. Renal function was normal and culture of the urine was sterile. Operation was undertaken with a diagnosis of ovarian tumor or cyst. Both ovaries, however, were found to be normal, but there was a small intramural fibroid in the fundus of the uterus about two or three cm. in diameter. This was removed and operation was followed by a normal convalescence. The patient, however, continued to have the same sort of attacks of pain, so that she entered the hospital again a year later. At this time investigation of the urinary tract showed a ptosis of the left kidney, and injection on this side showed hydronephrosis. This was confirmed by operation.

CASE 13. A man thirty-two years old complained of a dull ache low in the right back, which a few days before entrance became very acute and cramp-like. At this time the pain radiated across to the left side and caused nausea but no vomiting. There was no difficulty on micturition and no abnormality in the urine. He was supposed to be suffering from appendi-

cititis, and after the acute attack subsided his gastro-intestinal tract was examined by the x-ray. The report of this was that there was no abnormality except that there was some cecal stasis and a somewhat tender area in relation to the appendix, together with a little pylorospasm. The examination was otherwise negative. His pain continued, however, and on entrance to the hospital the urine contained a few blood cells, an occasional white cell and a slight trace of albumen. The renal function was normal. Although the plain x-ray plate showed nothing abnormal, injection of the kidneys showed a definite hydronephrosis. At operation the kidneys were found fixed at their lower poles (horseshoe kidney), the attacks of pain being due to an abnormal position of the ureter on the right side. This was altered, and the patient has since been entirely free from difficulty.

CASE 14. A single woman twenty-four years old complained of pain in the left side of the abdomen and back following a fall from a ladder six years previously. There had been repeated intermittent attacks of sharp left lumbar pain during the two years preceding her entrance to the hospital, and both she and her physician stated that she had repeatedly passed stones from the bladder and that the passage of these stones relieved the attacks of pain. Further, it was stated that on several occasions she had had hematuria and that she had been sometimes incontinent of urine while walking. She entered the hospital suffering from acute abdominal pain which ceased suddenly the following morning. Examination of her urine was entirely negative. Cultures were sterile and the patient had no fever. The total renal function was normal. X-ray plates failed to show any abnormality in the regions of the kidneys, ureters or bladder. She was discharged with a diagnosis of renal calculus, which had been passed previous to entry into the hospital.

Two months later she returned, complaining of the same type of pain. At this time x-ray plates, after injection of the kidneys, showed no evidence of remaining calculi on the left side, and, furthermore, the left pelvis was apparently absolutely normal. Specimens of urine from each kidney were also normal and cultures were sterile. The house officer's note at this time was as follows: "The patient's pain constitutes a perfectly definite indication for some radical procedure. She pleads for relief and therefore exploratory operation on the left kidney will be undertaken." This was accordingly done and the conditions found were, as may be surmised, entirely negative. The kidney was de-capsulated, however, and fixed in its position. Following a normal convalescence the patient returned again to the hospital four months later, saying that since her operation she had had four attacks of pain exactly the same as of old. This time she stated that during the pain she passes

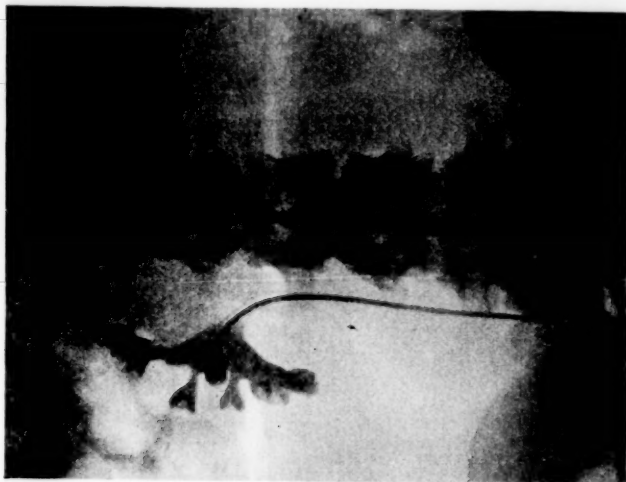


FIG. 20.—Case 14.



FIG. 19.—Case 13.

no urine for a whole day. No stone appeared at any of these last attacks, but the patient was having acute pain on entrance and thought that she was again about to pass a stone. Cystoscopy was again undertaken, and as the instrument was about to be introduced a small round stone was found lying just within the vulval orifice. Ocular examination of this showed it to be without question a simple pebble, such as are used in large numbers in flower pots containing bulbs; and I at last saw the light. Subsequent chemical analysis of the stone thus naively submitted by the patient showed it to contain 96 per cent. silicic acid. The moral, of course, of this story is that in the presence of negative evidence nothing is ever gained by an exploratory operation. In fact today it may confidently be asserted to be practically true that so far as the urinary tract is concerned the operation which is frankly exploratory should hardly ever be undertaken.

DIAGNOSIS OF EARLY BREAST TUMORS, BASED ON THEIR CLINICAL PICTURE OR THEIR GROSS AND MICROSCOPIC PICTURE AT THE EXPLORATORY INCISION.*

By JOSEPH COLT BLOODGOOD, BALTIMORE, MD.

CONTENTS.

| | Page |
|---|------|
| Publicity | 243 |
| Benign Conditions of the Breast for Which No Operation Is Indicated | 243 |
| Clinical History | 243 |
| Pain | 243 |
| Discharge from the Nipple | 244 |
| Disappearing Tumor | 244 |
| Inspection | 244 |
| Retraction of the Nipple | 244 |
| Ulceration of the Nipple | 244 |
| Palpation | 244 |
| Finding on Palpation | 244 |
| Definite Tumors, Single or Multiple, in One or Both Breasts | 244 |
| Multiple Tumors | 245 |
| Indefinite Tumors, Single or Multiple, in One or Both Breasts | 245 |
| Worm-like Tumors Beneath the Nipple | 245 |
| Diffuse Mastitis | 245 |
| Lactation Mastitis | 246 |
| Tubercular Mastitis | 247 |
| Non-lactation Mastitis | 247 |
| Cancer-Adenoma | 247 |
| Carcinoma Mastitis | 247 |
| Single Definite Tumor Without Change in Skin or Nipple | 247 |
| Routine Examination | 247 |
| Palpation | 248 |
| Clinical History | 248 |
| Diagnosis at the Exploratory Incision | 248 |
| Encapsulated Adenoma and the Blue-Toned Cyst | 248 |
| Frozen Section | 249 |
| Non-encapsulated Solid Tumors | 250 |
| Cancer-Adenoma and Cancer | 251 |
| Colloid Cancer | 251 |
| Cancer | 252 |
| Medullary Carcinoma | 253 |

| | |
|-------------------------------------|-----|
| Cylindroma | 253 |
| Cancer Cyst | 253 |
| The Benign Papillomatous Cyst | 253 |
| Conclusions | 253 |

Publicity. The writings[®] of Samuel Hopkins Adams in 1913 in the *Ladies' Home Journal*, *Colliers'*, and *McClure's* magazines were the beginnings of a national campaign of education on cancer. This has been continued by the American Society for the Control of Cancer, culminating in Cancer Week last October.

This publicity has influenced many women to seek advice very shortly after their attention has been directed to the breast by pain, or feeling a lump, or noticing a discharge from the nipple. I called attention to this in 1916.²

More recently, in March, 1922,¹ I recorded that among the last one hundred consecutive patients seeking my advice because of some trouble in one or both breasts, in about one-half, after examination, nothing was found which indicated operation. In the remainder there was at least one definite lump; at the operation in more than one-half the lump was not cancer, and among the cases of cancer in more than one-half the glands were not involved.

If we compare this experience of the first two years of this, the fourth decade, with the first decade up to 1900, one is astonished to find that in the group *benign conditions of the breast* for which no operation was done, the per cent. has increased from 2 to 50, while the per cent. of benign tumors operated on, as compared with the malignant, has increased from 10 to 50 per cent.

This change in the clinical picture and the pathology has increased the difficulties in diagnosis.

Benign Conditions of the Breast for which Operation is Not Indicated. I will briefly summarize what has been published in the *Journal of the American Medical Association*.¹

These conditions are recognized from the clinical history, from inspection and by palpation.

Clinical History. If the patient is twenty-five years of age, or younger, the possibility of a malignant lesion can practically be excluded.

Pain. 64 cases. Pain in one or both breasts, of any character or duration, is not, of itself, an indication of a lesion for which operation is necessary; and if a lump is palpated, the presence or absence of pain is of no particular value in differential diagnosis.

A painful scar (22 cases), whether observed after the excision of a tumor of the breast, or of the breast itself, or whether it has occurred after the complete operation for cancer, is not, of itself, a sign of recurrence of the previous trouble.

*Read at the meeting of the Boston Medical Library in conjunction with the Suffolk District Medical Society, Feb. 23, 1922.

[®]Suggested by my colleague, Cullen of Baltimore.

Discharge from the Nipple. 36 cases. The history of a discharge from the nipple, no matter what its character, does not indicate cancer, nor necessarily a precancerous lesion, unless a definite lump is found at examination, or unless there is evidence of ulceration of the nipple, suggesting Paget's disease, and operation is not indicated.

Disappearing Tumor. 24 cases. If this history is obtained, and a definite tumor can be palpated, it suggests that the tumor is a cyst in chronic cystic mastitis.³

Inspection. Unilateral hypertrophy before, during, or shortly after puberty (12 cases) which, on palpation, reveals a normal breast, requires no surgical intervention. Symmetry is usually restored by the development of the other breast² (p. 559). The huge enlargement of both breasts (diffuse bilateral virginal hypertrophy, 5 cases) requires no treatment, except complete excision of both breasts when the size is a deformity and causes discomfort¹ (page 197, Fig. 442, and ² page 559).

If in the unilateral hypertrophy there is extreme pain and tenderness, there is apt to be a central adenoma which may not be recognized on palpation. The breast should be explored.

Unilateral hypertrophy of the breast in the adult is usually due to the presence of a benign adenoma, or sometimes of mastitis.

Retraction of the Nipple. Congenitally retracted nipples may be unilateral. This type of retraction can be differentiated from the retraction due to benign or malignant disease only by obtaining a definite history.

Recent unilateral retraction of the nipple, not associated with lactation, should be looked upon as a sign of cancer, and the complete operation performed. It is a rare finding without a palpable tumor, and now and then it may be associated with chronic cystic mastitis³ (Fig. 29).

Ulceration of the Nipple. 3 cases. Paget described a clinical entity. He observed women with definite malignant lumps in the breast, who gave a history of first a warty condition of the nipple, or an eczema which slowly developed into an ulceration and completely destroyed the nipple, and this change in the nipple had been observed one to three years before the lump in the breast was felt.

In the first twenty years of my experience, I observed Paget's disease only in this stage. I always subjected it to the complete operation; none were cured. In the past ten years, especially in the past five years, due to publicity, I have records of almost 15 cases of Paget's disease in its early stage when the lesion was confined to the nipple, and the breast contained no palpable mass. In all but one of these early cases the breast has been removed, or the complete operation performed. All of these patients are well. In the majority, the microscopic section shows a carcinoma of a definite type, be-

ginning in the epidermis of the nipple and growing down into the breast through the ducts. In a few cases the microscopic appearance was that of a benign inflammatory lesion, or a benign wart.¹⁰ In only one patient was the nipple excised. The sections showed early cancer infiltrating the ducts. There was local recurrence, followed by the complete operation and death from metastasis. In the past year I have seen one example of a benign warty condition and two of irritated nipples not associated with lactation in which there had been redness, desquamation, and some oozing of blood. In these three cases the lesions quickly healed after cleansing with soap and water and a protective dressing, and these patients have so far remained well.

From this thirty years' experience with over 20 cases, a definite rule can be deduced: Any irritated condition of the nipple which does not heal quickly after cleansing and protection should be looked upon as Paget's disease and treated by at least the complete excision of the breast.

Palpation. This part of the examination is essential and, more than ever before, is the trained sense of touch required to differentiate between a definite lump, for which immediate operation is indicated, and an indefinite one which is simply part of a lumpy breast. Then, when a definite lump is felt, the operator should be anxious to train his sense of touch to distinguish between the benign and the malignant tumor.

In some cases this has been impossible. But I have found in recent years that more and more am I able to recognize the malignant lump on palpation, and when I do explore a tumor, I find less frequently that I have made the mistake of considering it benign when it was really malignant. Every surgeon who keeps careful records can check the results of his diagnostic ability to distinguish the benign from the malignant tumors on palpation.

Findings on Palpation. I have classified definite tumors as follows:⁴

A. One definite tumor in one breast. B. One definite tumor in each breast. C. Multiple definite tumors in one breast. D. Multiple definite tumors in both breasts. The letter *e* after A, B, C, or D, indicates that the single or multiple tumors are indefinite.

Definite Tumors, Single or Multiple, in One or Both Breasts. If a single definite tumor can be palpated in one breast, operation is indicated immediately, if the patient is over twenty-five years of age, and, for additional safety, I have placed this age at twenty. If the patient is younger than twenty, the tumor small, not painful, not increasing in size, there is no danger in delay, and I have observed quite a few to disappear.

When there is a single definite tumor in one breast with no change in the nipple, no dimpling of the skin, no fixation of the skin, and no atrophy of the subcutaneous fat, the differential diagnosis rests upon palpation of the tumor only, and, as I have just indicated, it should be our ambition to improve this delicate sense of touch. Publicity will greatly increase the number of such cases.

Multiple Tumors. If there is a tumor in each breast, or multiple tumors in one or both breasts, this suggests benignancy, and if the patient is nursing her child, or there is a history of recent lactation, delay may be justifiable on the diagnosis of a galactoele. But, on the whole, it is safer to explore the most definite of the multiple tumors and be governed by the pathological findings. Personally, I have never observed carcinoma as a multiple tumor except when associated with definite clinical signs of malignancy such as changes in the skin or nipple. These multiple tumors are adenomas, lipomas or multiple blue-domed cysts³ (page 486, and Fig. 11).

When there is a history of a disappearing tumor or a history of an excision of a tumor proved to be benign, the subsequent development of multiple tumors in one or both breasts is an indication of benignancy, but unless one has had considerable experience, it is safer to explore.

Indefinite Tumors, Single or Multiple, in One or Both Breasts. I now have records of more than 50 patients whose breasts, on palpation, revealed no definite lump, and usually multiple indefinite lumps in both breasts. We may call the latter a "lumpy" breast.

These 50 patients have been followed, some for many years, and none have developed carcinoma. Undoubtedly some may, but the evidence seems to show that the women in this group run no more risk of cancer than any other woman of the same age.

In my study of chronic cystic mastitis³ (pages 489 and 497), I described 48 cases of non-encapsulated adenomatous areas (BB-13-4) in which, in the majority of cases, the tumors were indefinite and usually multiple in both breasts, and in my opinion, operation was not indicated, and one or both breasts were unnecessarily removed. This pathological entity—an area of non-encapsulated adenoma—may produce a single definite tumor³ (Figs. 13 and 14).

When the tumor is indefinite, single or multiple, the gross appearance of these areas is beautifully pictured in Kelly-Noble,¹ Plate I, Fig. 1.

In the second group (BB-13-5)² (p. 497), there is, in addition to the adenomatous areas, one or more minute cysts, or one or more dilated ducts. Such an area may produce a single, definite tumor³ (Fig. 15), but in the majority of these 39 cases the tumors were indefinite and

usually multiple, and in these cases one or both breasts were unnecessarily removed.

I feel confident that the literature on the so-called chronic cystic mastitis has exaggerated its relation to cancer, and many surgeons have been influenced by fear rather than by fact; and even when only an indefinite area could be palpated, or multiple indefinite areas in one or both breasts, they have concluded that it would be safer to remove the breast and so protect the patient from cancer.

As I read my own evidence of thirty years, based upon more than 3000 cases, I am compelled to the conclusion that pain, discharge from the nipple and the palpation of one or more indefinite areas in one or both breasts, is not an indication for an operation, and that such patients run no more risk of cancer than any other woman of the same age.

But to distinguish between an indefinite and a definite lump in the breast requires experience and a trained sense of touch.

Unfortunately, surgeons with experience and this trained sense of touch have been misled, because when they have explored such an indefinite tumor, or removed the breast, their pathologists have reported to them that the lesion was adenocarcinoma, or "suspicious of malignancy," and this has been an obstacle to the proper development of differential diagnosis by palpation. I have discussed this in detail (3).

Worm-like Tumors Beneath the Nipple. This easily to be distinguished tumor is a definite clinical entity and has its positive pathology. It is due to the dilatation of the ducts beneath the nipple, and may be associated with a slight discharge from the nipple of brownish, or milk-like material, never of blood. I have described this clinical picture and pathology² (page 500) from a study of 22 cases, with gross and microscopic illustrations. At the present time I have four cases recognized on palpation for which operation was postponed, and the palpable tumors disappeared. As far as I can make out, there is no relation between this type of dilatation of the ducts beneath the nipple and cancer, and when the worm-like mass beneath the nipple is recognized with certainty, exploration is not indicated. Cancer, however, very frequently begins in the nipple zone. But the tumor, on palpation, is an area of induration which should be easily differentiated from the soft, compressible, worm-like tumor, and as a rule the cancer is quickly associated with retraction or fixation of the nipple.

Diffuse Mastitis. I have discussed the definite tumor which may be felt in any part of the breast and which varies in size, shape and consistency. There is not space here to describe the different types. If this tumor cannot be distinguished on palpation, it must be explored. Then I have just pictured the special worm-like

tumor beneath the nipple, and now I would like to describe a third definite clinical entity, which should be recognized on palpation. I have called it *diffuse mastitis*.

This diffuse mastitis may be due to a diffuse non-encapsulated cystic adenoma, a definite type of chronic cystic mastitis. For its clinical and pathological picture I refer to the *Archives of Surgery*⁵ (page 528) (BB-13-8). This form of chronic cystic mastitis is known in the literature as Schimmelbusch's or Reclus' disease, and in 1916 I called it *scute parenchymatous hypertrophy*.²

Briefly, there is nothing on inspection. On palpation, a quadrant, hemisphere, the entire breast, or both breasts, shows a definite thickening of the breast tissue; the involved breast has a palpable edge, like the liver or spleen; you can pick it up like a thick saucer, and in it you can palpate minute shot-like areas. If one breast is involved, it has been our rule to remove the breast, or to do the complete operation for cancer. In a few cases both breasts were involved and the bilateral operation was performed. In my communication in the *Archives of Surgery* I reported 13 cases. In one there was an area of cancer³ (Fig. 28), the glands showed metastasis, and the patient died of cancer. In the remaining 12 cases, of which two were bilateral, there was no positive evidence of cancer, and all of these patients have remained well.

In the past year I have repeatedly examined the breasts of three patients in which both breasts were apparently the seat of this type of chronic cystic mastitis. As I had never observed cancer in the bilateral type, I deferred operation under careful observation. In two patients the palpable areas have practically disappeared; in one, a recent case, it is still present.

This diffuse mastitis may be due to dilatation of the ducts in a quadrant or hemisphere of the breast. I have described my one observation in the *Archives of Surgery*⁶ (Fig. 19, page 511) (Pathol. No. 21192, BB-13-6). In this instance it could not be recognized from the diffuse type of chronic cystic mastitis until the breast had been removed.

Lactation Mastitis. During lactation there may be a diffuse mastitis of a quadrant, hemisphere, or of the entire breast, which never develops the clinical picture of an abscess, nor any changes in the nipple or skin. There is simply an area of induration, which, on palpation, is not unlike the diffuse chronic cystic mastitis except there are no palpable shot-like nodules. Although cancer of the lactating breast is infrequent, it does occur, and often it cannot be distinguished from this form of diffuse mastitis in lactation. When such breasts are explored, the gross and frozen sections give pictures difficult to differentiate the mastitis from the carcinoma. In all of these cases on my records the complete

operation for cancer has been performed, and I am inclined to think this is the safer procedure.

In lactation, an area of indurated breast due to so-called "caking" or pyogenic mastitis should do one of two things quickly: disappear or assume the clinical picture of an abscess and be incised. In a few rare instances this does not take place, and we are confronted with a diffuse area of induration. Of course, the probabilities are that this is mastitis, but the possibility of malignancy must be considered. I am inclined to think that in the future we shall be able to train ourselves to recognize the lesion by exploratory incision and the careful study of the gross appearance and the frozen section.



FIG. 1.—Pathol. No. 19740.—Tubercular Mastitis of left breast. Female, aged twenty-eight; pregnant five months; diffuse infiltration of inner hemisphere; no change in skin or nipple. Exploratory incision—diagnosis cancer. Complete operation. The photograph shows the bulging of the inner hemisphere. See Fig. 2.

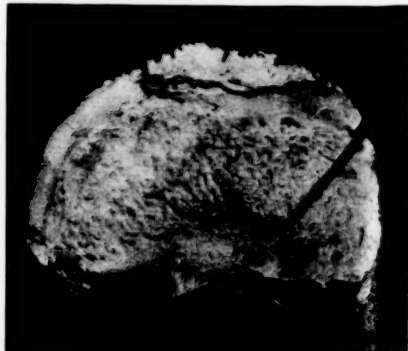


FIG. 2.—Pathol. No. 19740.—Tubercular Mastitis of left breast. Cross section through involved hemisphere shows pregnancy lactation hypertrophy, diffuse infiltration, dilated ducts filled with milk-like material. Microscopic sections—tuberculosis, no cancer. This patient is well six years after operation. Identical mastitis in right breast recovered without operation.

I had the opportunity to do this in three instances recently—all fortunately proved to be benign and the breasts were saved.

Tubercular Mastitis. In the early years of our experience, tubercular mastitis came under observation, due to delay on the part of the patient, with one or more sinuses. Then they came earlier, with the picture of a definite abscess. In my experience, sinus and abscess exclude carcinoma. When I wrote my contribution to *Binnie's Surgery* in 1917, I had only observed tuberculosis of the breast (Fig. 565) in the stage of sinus or abscess. But when I corrected the galley-proof I had just observed a case of tubercular mastitis without abscess, without sinus, which, on exploration, resembled carcinoma, and was treated for carcinoma (Figs. 1 and 2). Since then I have seen two additional cases. We, therefore, must be prepared to meet tubercular mastitis before the stage of sinus or abscess which on palpation will give an induration of the breast difficult to distinguish from carcinoma and which will require more than the usual experience to differentiate it from cancer even at the exploratory incision and from the frozen section.

Non-lactation Mastitis. Trauma, injection of salt solution, pyogenic infection of the breast secondary to a focus elsewhere, such as the skin, osteomyelitis, may appear with the clinical picture of diffuse mastitis, presenting the same difficulties as lactation mastitis and tubercular mastitis. I have just observed such a case. But the x-ray showed a definite focus in the rib beneath the mastitis, which indicated that, if it was carcinoma it was hopeless, and for this reason I explored, and found a post-typhoid osteomyelitis of the rib infiltrating the breast.

Comedo-Adenoma.¹ (Fig. 479, p. 225) and ² (Fig. 345, page 612). This type of adenoma, as previously described, may occur as a non-encapsulated small tumor, or as a diffuse infiltration

of the breast, palpating like mastitis. It can always be recognized at the exploratory incision by the worm-like masses (Fig. 3) which express on pressure, but as it is frequently associated with cancer, it should receive the operation for cancer. I have records of 49 cases; 21 are of the pure, benign type, and all of them remained well; 28 were associated with definite cancer, and show the usual operative results of cancer.

Carcinoma Mastitis. Carcinoma may infiltrate the breast so rapidly that it gives the picture of a diffuse mastitis (Fig. 4) and in the



FIG. 4.—Pathol. No. 29603. Diffuse carcinoma of the entire breast. Upper view of fresh cut; lower view of older cut, showing a few comedones. Highest axillary glands involved. The patient died of metastasis.

early stage there may be no change in the skin or nipple. The late stage has been pictured in Fig. 515, page 245, Kelly-Noble.¹

Therefore, when we have the clinical picture of diffuse mastitis in one breast, we must always bear in mind that it may be diffuse carcinoma or comedo-adenoma and cancer, and for this reason, unless the surgeon is well able to recognize the benign form, it will be safer to perform the complete operation for cancer.

Single Definite Tumor Without Change in Skin or Nipple. Before proceeding with the description of the clinical picture and the pathology at the exploratory incision, I wish to call attention to the routine examination which should be made in every case of breast lesion on more than one occasion, and, if operation is to be performed, again on the operating table.

Routine Examination. The examiner should not know the history, or which breast is involved. The patient should recline on a couch, stripped of clothing to the waist, with the arms elevated above the head (Fig. 5).

One should inspect first the nipple, looking for warts, eczema, signs of discharge, retraction; the areola, the breast and the axilla. A visible

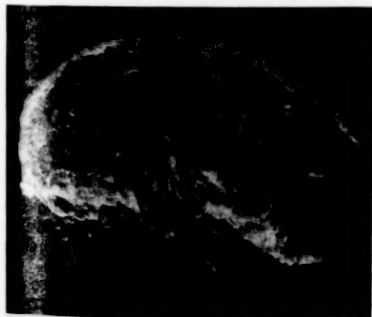


FIG. 5.—Pathol. No. 21085. Diffuse Comedo-adenoma and Cancer, involving entire breast. Cross section of breast shows the typical comedones. Microscopic sections show comedo-adenoma and cancer. See Fig. 18a.

fullness in the axilla extending beyond the outer and upper quadrant is due to breast tissue that not infrequently is present there. A visible small tumor is very suggestive of malignancy, except in the atrophic breast in patients with very little subcutaneous fat (Fig. 5).



FIG. 5.—The proper position for inspection and palpation of the breast. Inspection here shows benign warts of both nipples and a visible small tumor in the mid-zone of the right breast beneath the nipple.

Palpation. One should first palpate both breasts with both hands, feeling corresponding areas at the same time; then one breast with both hands, then with one hand. Every method of palpation should be employed. I find that palpating the breast with the fingers of one hand flat and moving the fingers up and down as when playing the piano is the best way to find the tumor.

When a definite tumor is found it should be studied as to its mobility, consistency and outline, its relation to skin, fat and nipple.

The breast occupied by the tumor should be pushed forward with the tumor to bring out dimpling. Fig. 6 (Path. No. 7973) [Previously reproduced in¹ Fig. 507] shows early dimpling, while Fig. 7 (Path. No. 8579)² (Fig. 309) shows bulging without dimpling; here the tumor proved to be a blue-domed cyst.

In spite of a very large experience, and especially recently, with tumors in which there was no clinical evidence of malignancy, that is, no changes in the skin, subcutaneous fat or nipple, I do not feel prepared to write as yet this very important chapter on the diagnosis of breast tumors from inspection and palpation. The facts are that one cannot be certain; and unless there are definite signs of cancer, one should explore.

Clinical History. The reason for making the examination first and getting the history later is that publicity is bringing women for such an examination with conditions of the breast with which the majority of surgeons have had little



FIG. 6.—Pathol. No. 7973.—Palpation of the lump bringing out dimpling of the skin over the lump—an almost certain sign of cancer when the lump is outside the nipple zone.

or no previous experience, especially single and multiple indefinite lumps. The examiner, therefore, should not be influenced by any suggestion as to whether or where the patient or a previous examiner felt a lump. I have considered this part of the problem in detail in a recent paper in the *Journal of the American Medical Association*.³

I have also given there the facts in the clinical history which are helpful. They may be briefly summarized in the beginning of this paper.

Diagnosis at the Exploratory Incision. The patient should be prepared for general anesthesia and shaved and cleaned as for the complete operation for cancer. The breast and tumor should be again carefully palpated with the gloved hand.

There is considerable difference of opinion as to whether the tumor should be cut down upon or excised with a zone of breast tissue. I prefer and practice the former, reserving the latter for small tumors in very fatty breasts.

The former allows the immediate exposure of the tumor through the smallest wound and, theoretically, gives less opportunity for dissemination of malignant cells, if the tumor should prove to be cancer, and allows a more immediate and thorough chemical and thermal cauterization the moment malignancy is demonstrated.

The vast majority of benign tumors are either distinctly ENCAPSULATED ADENOMA OR THE BLUE-DOMED CYST. If all other types of non-encapsulated tumors, or cysts not of the blue-dome type, were treated as malignant tumors, the per cent. of women mutilated would be relatively small.



FIG. 7.—Pathol. No. 8379. Palpation of the lump showing bulging instead of dimpling of the skin. This is suggestive, but not positive of benignancy. In this case the tumor proved to be a blue-domed cyst.

The operator should then first learn to recognize the blue-domed cyst. This is not difficult, and I have discussed it in detail in the *Archives of Surgery*.³ The distinctly encapsulated adenoma should not be difficult to recognize. I have described it in *Binnie's Surgery*.²

Figure 8 (Path. No. 21193) illustrates a distinctly encapsulated adenoma bulging like a dome from the surrounding normal breast. All adenomas have this distinct appearance, no matter what their size. Demonstrating this, the encapsulated tumor should be excised with a



FIG. 8.—Pathol. No. 21193. A distinctly encapsulated adenoma surrounded by a zone of normal breast tissue.

zone of breast, as shown in Fig. 8, and then the operator should bisect the tumor, as shown in Figs. 9 and 9a (21193 and 20269).

Frozen Section. The objection to the frozen section has been fully discussed in my recent



FIG. 9.—Pathol. No. 21193. Bissection of a distinctly encapsulated adenoma surrounded by a zone of normal breast tissue.

article in the *Archives of Surgery*.³ When pieces of the breast surrounding a blue-domed cyst and pieces of distinctly encapsulated adenoma are submitted to the pathologist responsible for the diagnostic work in the surgical clinics in this country, we find a marked difference of opinion, and when the diagnosis is "suspicious of malignancy," or "malignant," numerous breasts are unnecessarily sacrificed. Up to the present time I have numerous cases of both the blue-domed cyst and the encapsulated adenoma which have been diagnosed by a number of pathologists as malignant, but in which the operator has removed the cyst or the adenoma only, and there are no recurrences.

With these facts, which have been restudied again and again for a period of more than ten years, it is difficult to come to any other con-



FIG. 9a.—Pathol. No. 22269. Bisecton of a distinctly encapsulated adenoma, surrounded by a zone of breast, the seat of early lactation hypertrophy.

elusion but that the exposure of a blue-domed cyst or of a definitely encapsulated tumor must be looked upon as a sign that the tumor is benign.

Non-Encapsulated Solid Tumors. The moment that the surgeon in exploring a palpable lump in the breast fails to recognize a blue dome



FIG. 10.—Pathol. No. 28540. Cross section through a non-encapsulated benign comedo-adenoma. The markings are characteristic. If compressed comedones are exposed, as shown in Fig. 3.

or a definite capsule, he has evidence that should make him suspicious that he is dealing with a malignant tumor; and unless he has been trained thoroughly to recognize the small group of non-encapsulated benign tumors of the breast, he should chemically or thermally cauterize the wound and proceed with the complete operation for cancer.

In the *Archives of Surgery*,³ I have illustrated and discussed the non-encapsulated adenoma (BB-13-4, 5 and 7), and since the publication of this article in November, a number of other cases have come under observation, but I will not discuss them here, but picture the larger and more important group of non-encapsulated malignant tumors.

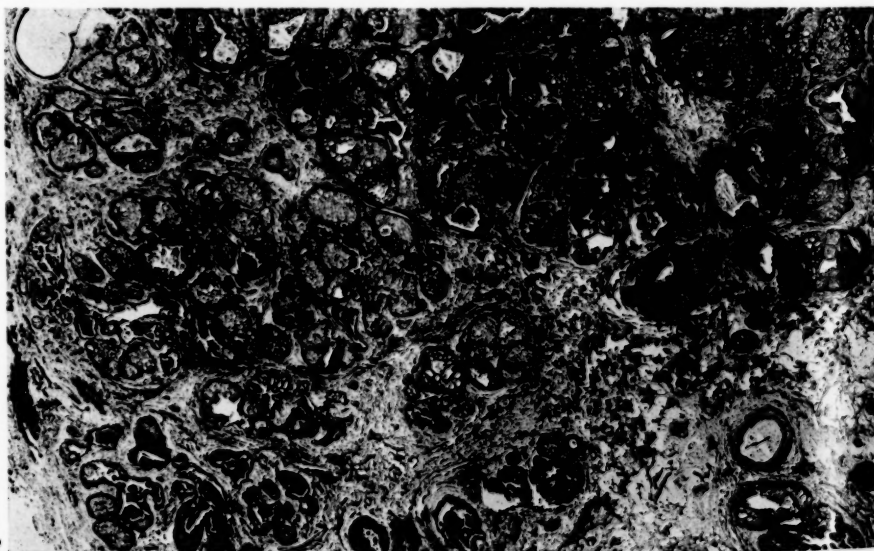


FIG. 11.—Pathol. No. 28540. Microscopic section (very low power) of pure benign comedo-adenoma. For comedo and cancer, see Fig 18a.



FIG. 12.—Pathol. No. 24144. Section through breast showing, to the right, circumscribed but non-encapsulated colloid cancer; to the left, breast tissue beneath the nipple. No evidence of chronic cystic mastitis.

Comedo-Adenoma and Cancer. I have records of 49 cases. The majority are small tumors, usually circumscribed. A few diffusely in-

volve the breast and appear clinically as mastitis (Fig. 3). This tumor should always be treated as cancer, because in 28 out of the 49 cases definite cancer was found microscopically. When the tumor is cut into (Fig. 10) (Path. No. 28540) it has a characteristic gross appearance—it is studded with granular areas from which worm-like masses can be expressed; it also has a typical appearance in the frozen section (Fig. 11) (Path. No. 28540).

This tumor should be as easy to recognize as the blue-domed cyst or the encapsulated adenoma.

Colloid Cancer. I have never seen this tumor encapsulated, but it is usually circumscribed. The moment one nicks it, its mucoid consistency is at once recognized. On its cut surface one sees gelatinous vesicles; it may be colored by hemorrhage (Fig. 12) (Path. No. 24144).

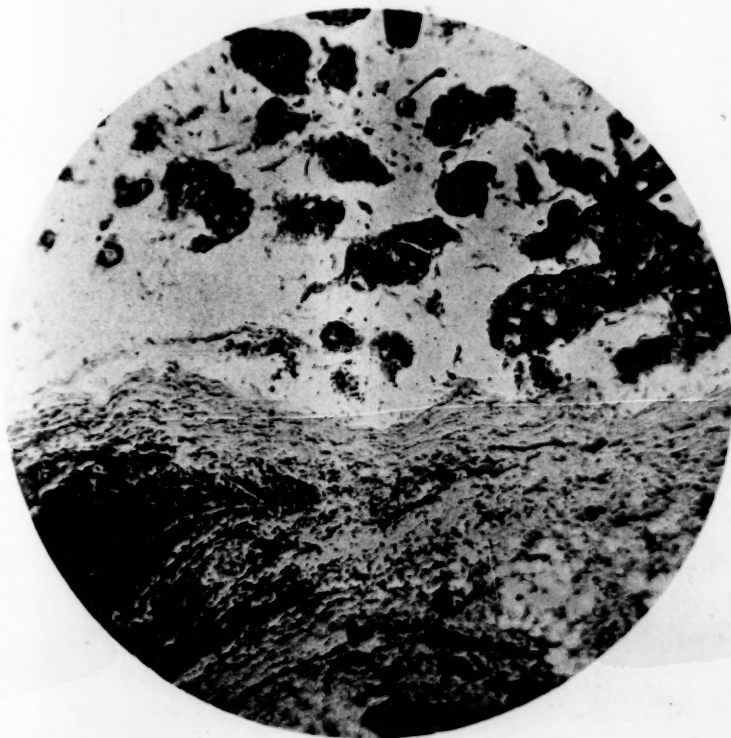


FIG. 13.—Pathol. No. 7101. Microscopic picture of colloid cancer. In area above, condensed breast stroma, with chronic inflammatory reaction in zone below.

The microscopic picture, to one familiar with the tumor, should differentiate it from all other breast lesions (Fig. 13) (Path. No. 7101).

The only tumor which might be confused with the colloid cancer is the pure myxoma. I have observed but two cases—both were distinctly encapsulated, and the operators removed the tumors only. In my opinion it would be wiser to treat the pure myxoma as a colloid cancer.

I have just restudied the intracanalicular myxoadenoma. With rare exceptions it is always an encapsulated tumor. At first sight in the very myxomatous type it might be confused with the myxoma or colloid cancer, but its consistency is always firmer; gelatinous vesicles never form on its surface; it is not friable and never exudes mucoid material. As a matter of fact, rarely do operators fail to recognize the benignancy of the encapsulated intracanalicular myxoadenoma. Its microscopic appear-

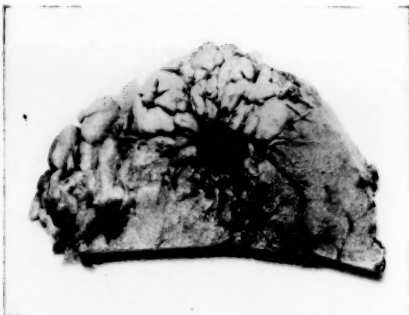


FIG. 14.—Pathol. No. 29309. Small scirrhous cancer in a fatty, scirrhous breast. Note the cupping and the pulling of the fat towards the small cancer. This tumor was some distance from the nipple.

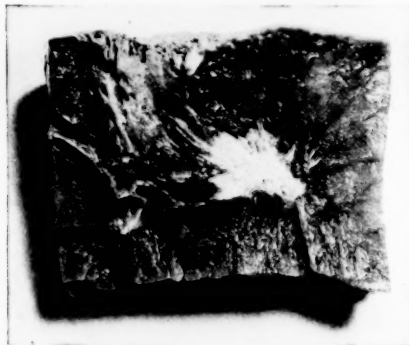


FIG. 15.—Pathol. No. 27858. Small scirrhous cancer surrounded on three sides by fat; to the left, remains of breast tissue beneath nipple. Note the branching lines from the cancer. One of these has retracted the nipple, another dimpled the skin.

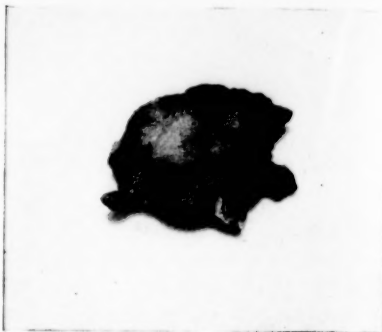


FIG. 16.—Pathol. No. 29246. Small scirrhous cancer with typical radiating lines into surrounding breast fat. Tumor is more cellular than those shown in Figs. 14 and 15.



FIG. 17.—Pathol. No. 29360. Small circumscribed scirrhous to the left, without the radiating lines shown in previous illustrations; breast with a few dilated ducts to the right.

ance is also characteristic³ (Fig. 36).

Cancer. The small infiltrating scirrhous should never be mistaken. The surrounding breast tissue or fat is retracted towards it, giving it a star-like appearance (Figs. 14 and 15) (Path. Nos. 29309 and 27858).

Scirrhous cancer may be somewhat circumscribed, but even then we may see the fine lines of stroma extending from the tumor into the surrounding breast or fat (Fig. 16) (Path. No. 29246). Now and then the scirrhous is distinctly circumscribed and has not the star-like appearance as shown in Fig. 17 (Path. No. 29360). Scirrhous cancer usually cups on section; non-encapsulated benign tumors never do. It has a characteristic hardness; it gives a gritty sensation to the knife; granular material may be scraped from the surface. But in a few instances the hardness and the gross markings of a non-encapsulated tumor may closely resemble scirrhous cancer. [See illustrations in the *Archives of Surgery*³ (Fig. 21) (Path. No. 17012).]

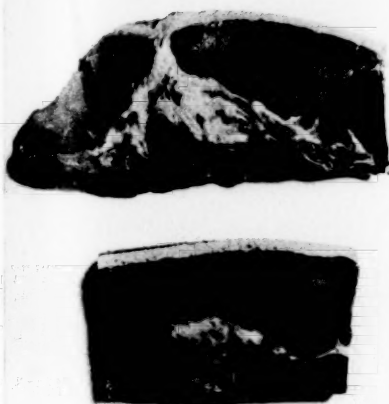


FIG. 18.—Pathol. No. 28940. Upper photograph shows section through nipple and breast; fibrous breast tissue surrounded by fat. Below, section of slightly infiltrating medullary carcinoma with a few comedones, surrounded by fat. For microscopic section, see Fig. 18a.

Medullary Carcinoma. This form usually occurs as a circumscribed tumor. The retraction and star-like appearance of the scirrhous are absent. It can always be distinguished from benign tumors by picking it with the knife, as it is always friable and granular (Fig. 18) (Path. No. 28940).

Cylindroma. This is a rare form of cancer, and is usually well circumscribed (Fig. 19) (Path. No. 21010). The frozen section, however, is quite different from the encapsulated adenoma (Fig. 20) (Path. No. 21010).²⁵⁷

Cancer Cyst.²⁵⁶⁷ A detailed discussion of this malignant lesion will have to be postponed. I have described it briefly in *Binnie's Surgery*.² The cancer cyst never has a blue dome. When it is picked one can recognize malignancy by the thick wall or by the contents of the cyst, which is either blood or a thick grumous material.

The Benign Papillomatous Cyst.²⁵⁶⁷ I find that this tumor has given operators more difficulty than any other benign lesion of the breast, because in the majority of cases they have either removed the breast or performed the complete operation for cancer. In my cases which I have explored I have never found a blue dome. The dome is gray. When opened, the cyst may contain blood, but one always finds within the cyst

a distinct papilloma. In cancer there is never a distinct benign papilloma. When the benign papillomatous cyst is excised with a zone of breast the wall of the cyst forms the base of the papilloma, and there has been no infiltration of the breast beyond. Now and then the entire cyst is filled with the compressed papilloma, and this tumor resembles closely the medullary carcinoma. It is only the distinct cyst wall which surrounds it that allows differentiation. Frozen sections of the papilloma within the cyst are very confusing.

The benign papillomatous cyst is not an infrequent tumor. I have records of some 45 cases, while during the same period we have about 34 cases looked upon as cancer arising in a papillomatous cyst. I believe, however, that a careful study of the cases, palpation before operation, and inspection at the exploratory incision should allow one to recognize the majority of the benign papillomatous cysts.

The important thing to remember is that when one is in doubt, the complete operation for cancer should be performed.

I have worked out roughly that if surgeons can recognize the blue-domed cyst, the distinctly encapsulated adenoma as benign, and remove the tumor only, and then follow the rule of performing the complete operation for cancer in all other cases, they will unnecessarily remove the breast for benign lesions in only about 15 per cent. of the cases. I am also inclined to the view that as they become more expert in palpation and pay more attention to the gross appearance they will gradually become able to recognize the distinctly benign non-encapsulated adenoma and areas of chronic mastitis and small areas of tubercular mastitis, and the distinctly benign papillomatous cysts. I am also inclined to the opinion that publicity will increase the relative proportion of these more difficult to recognize non-encapsulated tumors of the breast. My experience during the past two years confirms this belief. When I wrote my chapter in *Binnie's Surgery* in 1917 I had never seen tuberculosis of the breast without sinus or abscess. Since then, with rare exceptions, tuberculosis of the breast has presented itself clinically as mastitis or as an irregular palpable tumor, and when explored the usual gross appearance of tuberculosis—abscess or caseation—was not seen. The non-encapsulated adenoma and areas of chronic cystic mastitis have increased rapidly in numbers since 1917. The most rapid increase has fortunately been in the blue-domed cyst.

Conclusions. Now that women are responding to the message of the profession in regard to lumps in the breast, and now that the general medical profession is no longer a party to delay, surgeons will see breast lesions in their earliest stages.

More attention must be paid to the clinical



FIG. 18a.—Pathol. No. 28940. Microscopic section showing carcinoma and comedo-adenoma.

history and to the examination by inspection and palpation, first, to exclude the group in which operation is not indicated; second, palpation of a definite lump must be developed to a method of greater precision; third, when tumors must be explored, surgeons must learn to recognize the benign type in which excision of the tumor with a zone of breast is sufficient for the protection of the patient.

For the present the mistake that should never be made is an incomplete operation for a malignant lesion. A mistake which is, and must be made, in a certain group of benign lesions difficult to recognize, is the complete operation.

I am inclined to the conclusion that the majority of trained surgeons can, and do, recognize cancer of the breast at exploration, and also the distinctly encapsulated adenoma and the blue-domed cyst.

We should encourage more detailed papers on the group of benign lesions difficult to recognize, because they are not encapsulated, or because they are not blue-domed cysts. For this reason communications, such as Dr. Lee's of New York, in a recent number of *Surgery, Gynecology and Obstetrics* on traumatic fat necrosis are of great value, and also the study of Kilgore¹⁰ on Paget's disease of the nipple, and a recent paper by Trout of Roanoke, read before the Southern Surgical Association, on the relation of malignant disease of the breast to pregnancy, and the excellent articles of Bartlett¹¹ from Terry's clinic in San Francisco.

There is ample material in the large clinics of this country to form the basis of such papers. Operators throughout the country need, and will welcome, helpful contributions of this character.



FIG. 19. Pathol. No. 21010. Section of a circumscribed, but not encapsulated carcinoma of the cylindroma type, surrounded by normal breast. For microscopic section, see Fig. 20.

ADDENDUM.

Note: July 29, 1922.—Since this paper was read in February, five months ago, I have presented it to at least a dozen audiences, and the discussions lead me to emphasize the following points:

1. The examination should be made without any knowledge of the history or of the breast involved.

2. At the examination palpation is the essential feature. First, to differentiate the indefinite from the definite single lump and, second, having found a definite lump to try in every way to recognize any palpable sign of malignancy.

3. At the exploratory incision the blue-domed cyst and the encapsulated adenoma should be recognized by their gross appearance.

I have recently explored a cancer cyst which had somewhat the coloring of a blue dome, opening the cyst, it contained thick grumous material; wiping this out, nodules of cancer could be seen and felt in the wall. In a second cancer cyst explored in the same week, the dome was gray, not blue, the contents bloody; wiping this out, one could feel and see cancer nodules in the wall. Cancer cysts, therefore, can be differentiated from the blue-domed cyst by their contents.

The galactoele has an opaque, white dome; its contents are creamlike or like milk. Cancer never appears in this form.

4. Scirrhus and medullary carcinoma are never encapsulated and have their typical gross

appearance as described and pictured in this paper. This is also true of the comedoadenoma, with and without cancer, and the colloid cancer.

5. When the explored tumor is not a blue-domed cyst or an encapsulated adenoma and not a cancer cyst, or a non-encapsulated area of solid cancer, it will appear as a non-encapsulated area, with or without minute cysts or dilated ducts. I have described these tumors in detail, in the *Archives of Surgery*. Unless the surgeon has sufficient experience to be certain of the benignancy from the gross appearance, and frozen section, the complete operation for cancer should be performed. I am inclined to the view that, as surgeons and pathologists learn to recognize the gross and microscopic appearance of the various stages of so-called chronic cystic mastitis as a benign lesion, they will be able to differentiate the nonencapsulated tumor of the benign adenoma type from the same lesion with areas of cancer.

To repeat, until they are able to do this, all these lesions should be treated as malignant.

6. The recognition of the benign from the malignant papillomatous cyst apparently offers such great difficulties to the majority of surgeons and pathologists, that I reserve this problem for another communication.

7. Recurrence in, or in the region of, the scar is due to late intervention or bad surgery. I have had a large opportunity to observe the operations for cancer of the breast as performed in this country. My observations lead me to conclude that the surgery is good, but the bad results are due to late intervention.

8. To improve the results after operations for cancer of the breast, there must be earlier intervention of good surgery. This can be accomplished by publicity only. Good surgery will be of little avail without publicity.

9. The mistake that should never be made is an incomplete operation for cancer. The operation must never be in two stages.

10. The mistake that cannot always be avoided is the complete operation for cancer in doubtful cases.

As the operating surgeon pays more attention to gross pathology and has his tumors of the breast submitted for diagnosis to more competent pathologists, these mistakes in his clinic will be reduced.

11. When the surgeons of this country become as good diagnosticians as they are operators, I am confident that the number of women who lose their breast unnecessarily, will be reduced, and the number who are subjected to complete operation for tumors that are not malignant, will also be greatly reduced.

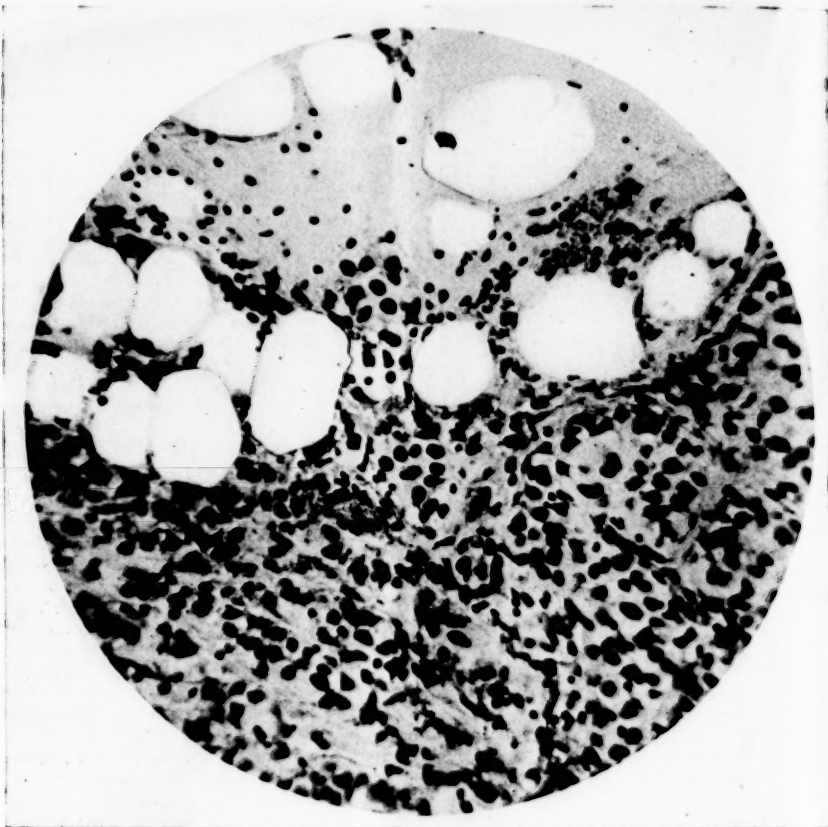


FIG. 20.—Pathol. No. 21010. Microscopic section showing cylindroma (a rare form of cancer of the breast) infiltrating fat.

REFERENCES.

CONTRIBUTIONS OF THE AUTHOR TO THE LITERATURE ON BREAST LESIONS.

- ¹Inflammations and Tumors of the Female Breast, Chapter in Kelly and Noble: Gynecology and Abdominal Surgery, Philadelphia, W. B. Saunders Company, 1907.
- ²Lesions of the Female Breast, Sect. 22, vol. 1, in Binnie: Treatise on Regional Surgery, Philadelphia, P. Blackiston's Son & Co., 1917.
- ³The Pathology of Chronic Cystic Mastitis of the Female Breast. Archives of Surgery, November, 1921, vol. iii, p. 443.
- ⁴Benign Lesions of the Female Breast for Which Operation Is Not Indicated. Jour. Amer. Med. Assn., March 25, 1922, vol. lxviii, p. 859.
- ⁵Senile Parenchymatous Hypertrophy of the Female Breast. Its Relation to Cyst Formation and Carcinoma. Surgery, Gynecology and Obstetrics, December, 1906, iii, 721.
- ⁶The Clinical and Pathological Differential Diagnosis of Diseases of the Female Breast. Amer. Jour. of Med. Sciences, February, 1908, cxxiv, 157, and Johns Hopkins Hosp. Bull., April, 1908, p. 139.
- ⁷Cancer Cysts of the Breast and Their Relation to Non-Malignant Cysts. Jour. Amer. Med. Assn., 1909, lili, 1473.
- ⁸What Every Woman Should Know About the Breast. Amer. Med. Assn., pamphlet No. viii, Prevention of Cancer Series.

⁹Cancer of the Breast. Figures which Show that Education Can Increase the Number of Cures. Preliminary Report from Address Delivered before the Western Surgical Assn., Des Moines, Iowa, Dec. 15, 1915.

¹⁰Kilgore: Archives of Surgery, September, 1921, vol. iii, p. 598.
¹¹Bartlett: Clinically Doubtful Breast Tumors. Annals of Surgery, June, 1921, vol. lxxii, No. 6, p. 740.

DISCUSSION.

DR. S. BURT WOLBACH: Dr. Bloodgood has illustrated the way in which advances must be made in clinical pathology. The surgeon must become his own pathologist, or at least he must follow his pathologist through. It is a fact that many pathologists become more skillful with their eyes and fingers than many surgeons, and the secret of some pathologists' ability to make diagnoses from frozen sections lies partly in their ability to make a diagnosis with their eyes and fingers. The ability to interpret gross appearances is a great asset and every surgeon should become enough of a pathologist to do so.

Some of the points that Dr. Bloodgood brought up are easily explained pathologically; for instance, his criteria for the gross appearances of malignant

tumors, the contraction and the dimpling of the skin. New epithelial growths cannot grow independently of connective tissue. Newly formed connective tissue (*i.e.*, stroma) must contract, and it is this contraction that produces the drawing in of adjacent fat tissue and dimpling of the skin.

Some of the slides that Dr. Bloodgood showed as doubtful cases of malignancy revealed the diagnosis of benignancy on the same slides. One, in particular, showed very definitely the smooth muscle accompanying the glands in the carcinoma-like area. Gland-like structures in adenomas of the breast, in growing, carry with them a supporting tissue which is a characteristic of gland structures from epidermal appendages, that is, a layer of smooth muscle. This was pointed out to me years ago by Dr. Mallory. In Dr. Bloodgood's slides the supporting elongated cells with very prominent fibrils—the smooth muscle accompanying the growth showed clearly. This characteristic structure is a very important criterion in the distinction between benign and malignant growths of the breast.

I do not know if Dr. Bloodgood meant to infer that patients who were alive many years after operation did not have malignant tumors. I think that some of these cases showing great infection of breast ducts by epithelium without stroma formation are most difficult to diagnose. Probably every pathologist remembers cases of proved malignancy where there was no demonstrable invasion of the connective or fat tissue in the initial growth. We have a belief that some malignant tumors may for a time grow entirely within the ducts.

DR. ROBERT B. GREENOUGH: We recognize that what we have heard tonight is the fruit of thirty years of remarkable industry combined with what is undoubtedly the most abundant material and largest experience in the surgical pathology of these diseases of the breast that there is. Dr. Bloodgood divides various borderline cases into a large number of different groups. Most of us have to content ourselves with the general statement that the epithelium of the breast in a woman over thirty-five shows an instability of growth which is a characteristic feature of that tissue. The expression of that instability of growth takes place in the production of a group of lesions, shading one into another, but verging more and more toward what pathologists like Dr. Wolbach recognize without question as cancer. The early stages of unstable growth may be either in the form of encapsulated tumors, or there may be diffuse changes throughout the breast which we, for lack of better knowledge, call cystic disease or chronic cystic mastitis. As those changes go on they appear to approach more and more toward malignancy, and although the estimated occurrence of malignant disease in these earlier conditions varies in different clinics they do not vary very much, and it is quite generally conceded that cancer is likely to develop in those cases if let alone and watched for an indefinite period. The doctrine in surgery for a long time has been that a tumor in the breast of a woman of cancer age should be regarded as malignant until it is proved something else, and no matter how skillful we may think ourselves in diagnosis from external examination, we must learn two things: first, that we are human and fallible and we may be mistaken in our diagnosis, and second,—a point which I don't think we always appreciate,—that even if we are correct in our diagnosis of a benign lesion, the fact that it is benign may give the individual assurance against the occurrence of cancer, which is false because later there may develop cancer reaching proportions such that radical cure is not possible, while the patient slumbers under the assurance that her condition is probably not malignant. It seems that those two possibilities are sufficient to justify operative treatment and the removal of tumors of the breast in women over thirty-five. Regarding the question of an exploratory

incision and its safety or danger to the individual, it is generally conceded that to cut into a breast tumor, remove a piece of it, close the wound and send the tissue to the pathologist is bad for the patient. There is experimental evidence that a clean incision into a tumor may not spread the disease more quickly than it was spreading itself. On the other hand, trauma of any sort, massage or rubbing, will spread the tumor to its metastatic areas more rapidly than if let alone, so I think it is fair to say that any interference with the tumor should be avoided, but more particularly interference which involves a delay period before radical measures are employed. On the other hand, direct incision into the tumor can be done with the minimum of danger to the patient if it is necessary. If there is a strong suspicion of cancer, or if the diagnosis of cancer is made in an older woman, there is ample justification for treating it as cancer, but in younger people an exploratory incision is a measure which can be done with safety. In our series from the Massachusetts General Hospital, cases from 1912 to 1914, there were four in whom that was done. They were favorable cases. They were all explored, at the operation the diagnosis was confirmed, and the operation completed, and all four cases were well six or more years after operation. Of the two cases in which operation was done in two stages, with a period of delay between, both were dead within a year.

DR. F. B. LUND: I must join the other speakers and thank Dr. Bloodgood for many years of most valuable instruction, not only in breast tumors, but also in the pathology of bone. These radiating lines of fibrous tissue Dr. Wolbach has spoken of, that draw in through the fat to the cancer, give the tumor itself a certain angular feeling, and I think that, as a general principle, cancerous tumors feel irregular and angular in shape while benign tumors do not. A man who has seen a good many of these cases and has followed the pathological diagnosis through and seen the sections, can make a better diagnosis on the gross section than the average man can on the frozen section. I do not mean the section sent to the pathologist carefully stained and examined, but the frozen section. The pathologist does not always succeed in making the section in the place where the cancer may be, and an experienced surgeon can, in 95 out of 100 cases, tell what the thing is. On the other hand, I do not believe in cutting into these tumors if you can possibly help it and there are only a few of them which you will have to cut into to decide whether it is cancer or not. If you have to do this, you should go over the surface with a cautery before you proceed with your radical operation. Never do a two-stage procedure of sending a specimen to the pathologist and having it come back. Of these little fat necroses which have been described by Dr. Lee of New York and which Dr. Bloodgood mentioned—I have had two cases; one was in a woman with a cancer on whom I did a radical operation, and I was very well satisfied with the prospect. Within six months she came back with three or four little lumps under the skin like lima beans. I could not think of anything but recurrence, but when they were taken out they proved to be necrotic fat. The other case of fat necrosis occurred in the breast of a woman who had had a uterine operation with hemorrhage and had a needle put into the breast for the injection of salt solution. I removed the breast tumor, which showed at operation what it was.

DR. BLOODGOOD (in closing): I would like to express my appreciation of Dr. Wolbach's remarks. He belongs to the younger generation of pathologists and I don't know that I have ever heard anything from the clinics in general pathology which pleases me more than what he has said. I believe it is the beginning of team work between surgeons interested in pathology and general pathologists. We all agree that the Medical School must have the university

atmosphere and I think that those who do the work chiefly in pathology and physiology need contact with the practical side of things, and those who work on the more practical side need the help of the scientific side of medicine. In the past the team work of the practical man and the scientific man has not been as good as it should be. He is the first general pathologist, as far as I know, who has said the surgeon ought to be his own pathologist. I am particularly interested in what he says of the presence of smooth muscle. It is just those little things we need to know in our diagnosis.

I want to call attention again to what Dr. Greenough said about the nature of certain changes we find in the breast. We do not know whether they are cancer or precede cancer. If publicity brings every woman to us the moment she feels a tumor and we do a complete operation for cancer and that tumor is cancer and the glands are not involved, the best we can offer is 70 per cent. A comparison with our figures (and we have a very large group) with Dr. Greenough's figures shows that they are practically identical.

VARICOSE VEINS AND ULCER: METHODS OF DIAGNOSIS AND TREATMENT.*

By JOHN HOMANS, M.D., F.A.C.S., BOSTON.

[From the Surgical Clinic of the Peter Bent Brigham Hospital.]

THE operative treatment of varicose veins of the legs has never had a very good name. The palliative treatment requires a good deal of effort to accomplish very little. Many patients are able to enjoy life with no treatment at all. It may be that the time, thought and skill, which successful surgery requires for the relief of a common condition annoying as a rule rather than incapacitating or dangerous, is not fully realized either by the laity or the profession. In this instance even more than in most surgical diseases it is true that routine operations will cure the average patient but that unusually careful treatment alone will secure the high proportion of good results which represents successful surgery. The reasons for this statement will be made clearer when the nature of the condition and the principles upon which its treatment is based are considered.

ANATOMY.

Anatomically, the veins in which we are interested are the great and lesser saphenous systems, which carry the returning venous blood from the superficial tissues of the lower leg (Fig. 1). The great or internal saphenous vein collects tributaries from the front and inner side of the calf, and passing up the thigh as a large single trunk, empties into the femoral vein at the saphenous opening. The lesser or external saphenous drains the back and outer side of the calf and joins the popliteal vein in the upper part of the popliteal space. All the veins of the legs, like



FIG. 1.—The superficial veins. The great or internal saphenous vein and its branches. Note the position and relations of the perforating veins. The lesser saphenous which drains the back of the calf, emptying into the popliteal veins, is not shown. (Published by courtesy of *Surg., Gynec., and Obstet.*, 1916, xxii, 143-158.)

those of the arms, are furnished with bicuspid valves so set as to allow the blood to flow only toward the heart.

As a sort of safety vent for the surface veins a number of short vessels pass from the larger trunks in the calf to the deep veins which accompany the great arteries. To reach the deep veins these vessels necessarily perforate the fascia covering the muscles, and their valves are so set as to allow blood to flow only from without inward, that is, from the surface to the depth.

As to the deep veins, it is only necessary to realize that since they care for the very active muscles of the calf and thigh they must carry a considerably larger volume of blood than those of the subcutaneous tissues. They are quite capable of disposing of the surface blood when the superficial veins are disabled.

PHYSIOLOGY.

Physiologically, the means by which the blood is carried up from the legs to the heart is particularly interesting (Fig. 2). There is, of course, a slow push from the capillary circulation. There is also suction from above, trans-

*Read before the New Hampshire Surgical Club, West Manchester, April 25, 1922.

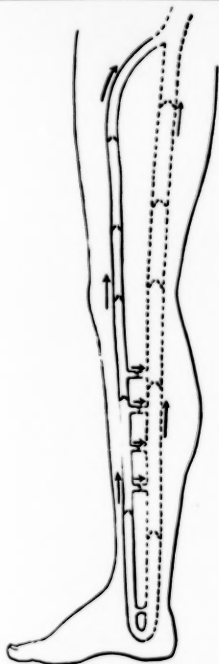


FIG. 2. Diagram showing the normal direction of blood current in the superficial and deep systems. Perforating veins connect the two and carry blood toward the deep vessels only. The diagram suggests roughly the relative capacity of the two systems. The free anastomosis between them in the foot is indicated.

mitted through the great abdominal vessels by the rhythmic pumping of the breathing and the action of the heart itself. But the force mainly responsible for sending the venous blood along lies in the action upon the vein walls of the muscles of the legs. The valves of the veins divide them into a series of chambers. Blood can pass up from one chamber to another but never back. Therefore any muscular motion which compresses any segment of a vein will force blood into the segment next higher. With this mechanism the main channels are most concerned and for it they are particularly adapted, since every entering branch has a valve at its root, and thus none of the muscular energy is wasted in driving blood from the large veins back into their tributaries. It is easy to see that in comparison with the deep veins, the surface vessels are at a real disadvantage. The deep veins are surrounded by muscle or lie between muscle and bone. Thus muscular pressure is applied to them directly. The surface veins lie in the superficial fat outside the deep fascia and are covered only by the skin. Therefore their walls are less actively supported and the pressure by muscle contraction acts on them

only because they are enclosed within the comparatively inelastic skin. It is doubtless to make up for this inferiority that the perforating veins of the lower leg are supplied. No one need doubt the importance of muscular movement in the venous circulation of the leg who stands perfectly still long enough to feel the tingling discomfort of the ensuing engorgement.

ETIOLOGY.

If we consider, as we certainly should, that a varicose vein is simply one whose valves are broken, it is easy to understand how the wear and tear of life brings about the disease. The weight of the column of blood resting upon any one valve is something which it can bear very comfortably, but let this strain be unduly prolonged as in occupations which require long standing, or let it be magnified by anything which forces back the blood column, as in conditions of increased abdominal pressure, and valves are apt to give way. When the abdominal muscles are set, as in heavy lifting, there is added to the weight of the blood column above the topmost valve, in the case of the femoral or the great saphenous vein, this increased intra-abdominal pressure. You may sometimes notice even on coughing a slight enlargement and a definite palpable thrill in the great saphenous vein just below Poupart's ligament. When there is no evidence of varicosity at a lower level this phenomenon may lead you to a diagnosis of femoral hernia.

We start life with fifteen to twenty valves in the main saphenous trunk from ankle to groin. There is usually additional protection in the presence of a valve in the femoral vein above the entrance of the saphenous. Since the great abdominal veins have none, increased abdominal pressure acts first on the topmost valve and here the breaking down in all probability begins. Thus the occupations calling for heavy and sustained lifting are usually responsible for the varicose veins of men. In women the association of the varix with pregnancy is exceedingly common, though just how the engorgement of the surface veins is brought about, as it frequently is, in early pregnancy before abdominal tension is much increased, is not at all clear.

Varix may originate in two other ways. In some individuals of either sex it appears in youth or at the time of puberty, presumably on account of some malformation of the vein walls or of the valves themselves. But the most distressing form of varicose veins, the one most intractable to treatment and prone to ulcer, arises from phlebitis, such as the milk leg after childbirth, or the phlebitis of typhoid fever. The infection and clotting are followed by a restoration of the main channel, but the valves are usually crippled and the vein walls thickened. Such veins, though small, are just as

"varicose" as the large tortuous vessels which are so familiar.

PATHOLOGY.

Only a word about pathology. As the valves fail, the veins dilate, and the nutrition of their walls suffers. Scar tissue begins to replace their smooth muscle and elastic fibres. They become elongated and distorted. Thus tortuous and sacculated areas are formed. Even calcification may occur. In such veins the blood can pour down more easily than it can mount up, and until elevation of the legs enables it to pass along or until it is slowly pushed up by the capillary blood behind, it stagnates (Fig. 3).

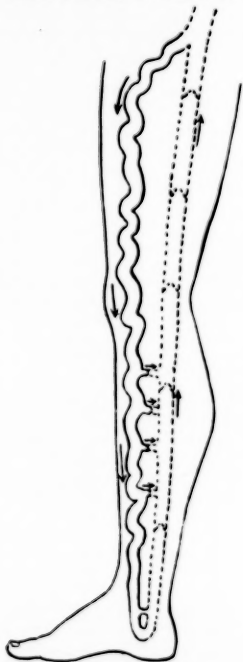


FIG. 3.—Diagram showing the direction of the blood current in varicose veins. Blood flows down the surface veins. The perforating veins carry blood from the varicose surface vessels to the deep system. The deep veins do additional work.

The pressure within such vessels is increased according to the height of the column of blood above any given point, but on coughing or straining it is, of course, enormously magnified. Hence, the occasional rupture of a varicose vein. If the perforating veins are equally varicose, as may occasionally be the case, stagnation and back pressure are still farther intensified, since the deep veins, which, practically speaking, are never diseased, cannot then help, and may even contribute some of their load to

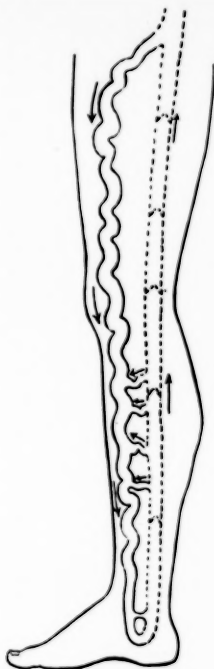


FIG. 4.—Diagram showing the direction of blood current in superficial varix with incompetent perforating vessels. The perforating veins add to the disability of the surface vessels.

surface vessels (Fig. 4). When, however, the perforating veins are competent, and particularly when varix develops slowly, there occurs what amounts to a collateral circulation (Fig. 5.) This may be so efficient that the only sign of varix is a single great tortuous trunk passing down the thigh to the inner calf and ankle. The skin of the entire area may then be well nourished. But if the stasis is more widespread and considerable areas of skin are bathed in stagnant blood, other changes follow which lead to ulcer.

ULCER.

Ulcer is the most common complication of varicose veins. To establish it an injury plus infection is necessary, but the stage is always set. The first sign of impending ulceration is usually the pigmentation which appears in larger and smaller patches upon the front and inner sides of the lower leg (Fig. 6). This is the region of greatest stasis since the long column of blood reaching to the heart is above it and there is not the free anastomosis with the deep circulation which is present in the foot. The appearance of pigment, which is often ac-



FIG. 5.—Uncomplicated varix. The skin is everywhere well nourished. Note the dilatation at the saphenous opening.



FIG. 6.—Varix showing the diffuse pigmentation of impending ulcer. Note the position of the pigmented area in relation to the single saphenous vein.

complicated by a shiny atrophy, is evidence of the irritation due to poor nutrition. Only a scratch or a blow is necessary to establish an ulcer, for the badly nourished tissue almost in-

evitably becomes infected. The extent of the ulcer then depends upon the degree of malnutrition and upon the character of the treatment which is used.



FIG. 7.—Varix complicated by ulcer. Note the relation of the ulcer on the right and the pigmented area on the left to the varicose veins. Compare with Figs. 8 and 9 for demonstration that the perforating veins of the left calf are competent.

DIAGNOSIS. (Fig. 7.)

The appearance of fully developed varix is so unmistakable that only the refinements of diagnosis are important in coming to a decision as to the treatment. Since the blood readily pours down a varicose vein, the simplest test of the loss of its valves is suddenly to lower the leg which has previously been emptied of blood by elevation. This is easily done by placing the patient in a rocking chair, raising the leg as the chair tips back, and asking the patient to stand up as the chair tips forward (Fig. 8). The test was devised by Trendelenburg, the author of the position used so generally in abdominal operations upon the pelvis. The veins, of course, stand out tensely as the patient stands. But there is a very obvious refinement of this test which gives even more information. Before the leg is lowered, pressure is made upon the great saphenous vein in the thigh sufficient to prevent the flow of blood down it. When the patient stands, the vessels remain collapsed below the point of pressure and fill with a shock when the pressure is removed. This test is most conveniently carried out by passing a short length of gauze bandage about the upper thigh. The ends of the bandage are held as reins are held in one hand in driving. A half twist of the hand gives sufficient constriction and release is easily made (Fig. 9).

Suppose now that as the patient stands, the constriction is not released but maintained. If then the veins are seen and felt to fill quite rap-



FIG. 8.—The same patient shown in Fig. 7. The varicose veins have been emptied of blood.



FIG. 9.—Demonstration of the constriction test. The same patient shown in Figs. 7 and 8. Note the constricting bandage about the upper thigh and the method of tightening the bandage. The varicose veins remain empty below the constriction at the end of half a minute.

idly below the constriction, they obviously have not filled with fresh blood from the arterial circulation, since this is a slow process requiring perhaps three-quarters of a minute. Nor have they filled by downflow from above, since the bandage prevents it. Therefore they must have filled from the deep veins by leakage of the valves of the perforators which normally, as you will remember, conduct blood only from without inward. This incompetence of the per-

forating veins indicates a greater gravity of the condition and is particularly important in planning the treatment of ulcer. For, if, as sometimes happens, an ulcer lies directly over one of these vessels, and if at operation only the superficial veins higher than the ulcer are removed, the presence of the leaking perforator will continue to lead to stagnation of blood in the region of the ulcer and failure to cure. However, even in varix uncomplicated by ulcer, the test may be valuable. The lesser saphenous vein perforates the popliteal space. Its branches on the back of the calf may, without showing much enlargement, communicate with the great saphenous. If it is varicose, it may alone be responsible for the filling of the surface veins below the constriction in the thigh. If early filling below the constriction is evident and varicosity of the lesser saphenous is suspected, the same test can be applied at the level of the knee. If constriction here now checks the filling below, the lesser saphenous is the leaking perforator and must be removed. It is not rare to find recurrences after excision of the great saphenous vein from failure to deal with this vessel.

Now to go back a moment. We have just followed the course of events when the superficial veins fill below the constriction upon lowering the leg and we have seen that such filling indicates a leak into the surface vessels from the deep. If, on the other hand, the superficial veins remain empty for a half minute or more after the leg is lowered, there is no such leak. We are then dealing with a pure surface varix and the treatment even in the presence of ulcer is simplified.

TYPES OF VARICOSE VEINS.

The relation to treatment of the examinations I have just described may appear more obvious if there is kept in mind a picture of the various types of varix. The common type, of course, shows the large dilated tortuous veins with which we are all familiar (Fig. 5). The plexus of large veins is most evident on the inner side and front of the calf, but the tortuous channel of the main vessel is frequently noticeable in the thigh as well. In women, whose subcutaneous fat is more abundant than that of men, the varicose vessel in the thigh is frequently palpable rather than visible. In that case its position may be detected by locating the impulse set up by tapping the tense veins of the calf, a procedure known as the Schwartz test. In men, however, the great saphenous vein is usually visible up to the saphenous opening, where a large saccululation is often present. Of this familiar type it may be said that the worse it looks the easier it is to treat. For while the varicose condition of the principal superficial vessels is gradually becoming established, there is usually developed sufficient compensatory circulation outside the great saphenous system to keep the skin well nourished. The

performing veins are usually competent. The most the patient suffers from is a feeling of fullness and discomfort on long standing. When ulcer does occur, it usually "rides" upon a large vessel, and, unless it has been long and badly infected, is easy to cure. The Trendelenburg test shows immediate filling of the veins on standing. The constriction test shows, in most instances, no filling of the vessels below the constriction when the leg is lowered, since the perforating veins are normally fulfilling their function. Indeed, you will occasionally see a patient in whom the perforating veins are so efficient in their rôle of safety valve that, even in the fully erect position, the surface vessels remain relaxed below the constriction in the thigh for long periods.

The contrast to the common type is seen when varix arises after a phlebitis or when phlebitis attacks veins already more or less varicose. In such conditions the surface veins are often so scarred and shrunken as to be invisible. They may usually be palpated, however, as hard cords. Such dilated surface veins as may be evident are not the principal channels but distended tributaries ordinarily insignificant. Often it is not the visible veins which call attention to the disease, but the ulcer or ulcers which almost in-



FIG. 10.—Post-phlebotic varix. Note the absence of visible veins and the extensive areas of pigmentation.

variably complicate it (Figs. 10 and 11). Indeed, I venture to say that a diagnosis *not* of varicose veins and varicose ulcer, but of syphilitic ulcer is commonly made in such cases. I happen to have seen a considerable number of them, have found the Wassermann reaction neg-



FIG. 12.—A "freak." A varicose vein tributary to the gluteal vessels. In the thigh it is associated with a nodule which extends from the outer upper thigh to the front of the patella.

ative, and have usually been able to get the history of phlebitis which confirms the diagnosis. Apparently two factors contribute to the formation of ulcers in these unfortunate patients. One is the quite general infection of the calf which accompanies the phlebitis and leaves the tissues badly scarred and poorly nourished. The second is the very common involvement of the perforating veins in the phlebotic process. Stasis and malnutrition are therefore magnified. Ulcers are common, often diffuse, and occasionally multiple. It is in this type of varix that the constriction test most often discloses rapid filling below the constriction. The test must often be made more by the sense of touch than by the sense of sight, since the surface veins are so often sclerosed and inconspicuous. In some instances, the filling of the veins on standing is equally rapid, whether the main vessel in the thigh is free or compressed.

The third type takes in what may be called the freaks (Fig. 12). This includes the unusual dilatations of vessels of the outer leg and thigh independent of the great or lesser saphenous systems. It includes such general dilatation of all the surface veins of the lower extremity, and of the abdomen as well, as arise without obvious cause. And it includes varix of the lesser saphenous vein alone, a condition hard to explain on a basis of back pressure, since one would expect the great saphenous system to be involved in all instances before the lesser.

This sketch may perhaps make clearer the reasonableness of studying and analyzing the con-

ditions present in any given patient suffering from varicose veins or ulcer. The importance of an accurate diagnosis will appear even more obvious when the choice of treatment is considered.

AMBULATORY TREATMENT.

First, a word about palliative treatment. This consists in so compressing by bandages the dilated surface vessels that they are kept emptied of blood. In this way the patient's sense of fullness and tingling is relieved and the blood is actually forced into channels capable of carrying it toward the heart. Efficient bandaging, and by the word I mean to cover the use of elastic or canvas stockings as well as of gauze and flannel rollers, may prevent the development of ulcer and will usually cure it when present. Soap and water cleanliness of a varicose leg is an indispensable accompaniment. The particular ointment applied to the ulcer is far less important than the pressure of the bandage. And in any case, no bandage, however efficient, can approach the effect of rest in bed.

If a varicose ulcer must be treated in the ambulatory manner, a most satisfactory arrangement is the use of the so-called "jelly" bandage. This consists of several layers of ordinary gauze bandage permeated with Unna's paste. An excellent formula for this paste is:

| | |
|-------------|---------|
| Zinc oxide, | 10 gm. |
| Gelatin, | 40 gm. |
| Glycerin, | 120 cc. |
| Water, | 150 cc. |

The gelatin is dissolved in hot water by heating. Mix the zinc oxide with the glycerin. Put all ingredients together and let stand until hard, occasionally stirring. In hot weather the gelatin may be increased at the expense of the glycerin.

To be used, the paste is heated in a water bath until it liquefies, and is then applied as follows: The leg, which has been elevated for some time, is painted from toes to knee with the liquid paste. To this surface a smooth layer of gauze bandage is applied. Upon this, a second painting of paste is laid on, and in this way, three or four layers of bandage impregnated with paste are smoothly fitted to the leg. The heel is not included. After a few hours of drying, the jelly bandage is comfortable, flexible and very durable. It may remain in place for several weeks. The ulcer, if small and little infected, may be directly and permanently covered, but it is usually wiser to cut a window over it for the purpose of making local applications. The jelly bandage can also be used with advantage in convalescence from operation, especially when the patient is first getting about. In general, it may be said that though this particular dressing requires some practice and skill in application, it is far superior in every way to ordinary bandaging. But however successful any form of palliative treatment may be, it



FIG. 11.—Post-phlebitic varix. Note the crease on the inner face of the calf as evidence of the adhesion of the skin to a small thick-walled vein beneath. No veins are visible. The ulcer is directly tributary to the vein indicated by the crease.

never alters the basic varicose condition, and only while it is maintained does it prevent the recurrence of ulcer.

OPERATIVE TREATMENT.

Operative treatment aims to do away altogether with varicose veins. To be successful it must permanently break the column of blood between the great abdominal veins and the superficial circulation below. It only removes what is worse than useless, the varicose channels down which blood has been pouring to increase the labor of the deep veins. The work of the latter, far from being increased by excision of the varicose surface veins, is thus actually lightened. In carrying out the operation one should bear in mind, first, that the great saphenous vein must be most thoroughly eradicated at its upper end; second, that all wounds must heal perfectly; and third, that ulcers must be so treated that they cannot recur. Let us take up separately these three requirements.

The Removal of the Great Saphenous Vein. Recurrence after operation comes most often from a reestablishment of connection between surface veins remaining in the leg and the stump of the great saphenous. Therefore the vein must be tied and divided close to the femoral, and the several small branches which enter it in this region, both from above and below, must be disposed of as well. This is most conveniently

done through an oblique incision several inches long just below and parallel to Poupart's ligament. From this point on, the main channel may be stripped or excised by open dissection to a point below the knee. To all intents and purposes this is the whole operation. The removal of the distended veins of the calf, once all danger of back pressure from above is at an end, is only essential when incompetent perforating veins have been shown to be present. Both operator and patient are usually better satisfied, however, if the lower leg as well is dissected.

The Prompt and Sound Healing of Wounds.

Wounds of even normal legs heal perhaps a little less well than those of less dependent parts. Wounds of varicose legs are at a still greater disadvantage. Therefore if operations are to be uncomplicated by sloughing and infection and to lead to quick and complete healing, the tissues must be handled with the greatest gentleness and cleanliness. Incisions should always be carried down cleanly to the deep fascia. The skin edges should be held open with retractors and not continually seized with forceps. When a tortuous adherent vein is to be removed, it is better to turn up a thick flap and to remove the vein from underneath it than to follow the vein from the surface. This is particularly true and important for the calf, since the thigh vein is most easily eradicated with the Mayo stripper. In any case, it is most unwise to make an incision of any sort on the inner side of the knee, for a thick and unstable scar is apt to result. Use fresh sets of forceps and haemostats frequently. Seize the smallest possible bite of vessel in your haemostat. Use fine ligature material and leave wounds dry and without dead space. Then incisions will heal perfectly. There is almost no surgery in which poor technic is more heavily penalized. If you can perform a complete excision of the varicose great saphenous vein in an hour you will be operating quickly.

The Treatment of Ulcer. It is here, above all, that variations in treatment according to the tests already described may profoundly influence the result. Suppose that a small and not particularly indurated ulcer "rides" on a large vein in the calf. The tests show that on lowering the leg while constriction is applied to the surface vessels in the thigh, the veins of the calf remain empty for a half minute or more. There are then no incompetent perforating veins. The usual operation of excision down to the ulcer region is carried out. It is unnecessary and undesirable to follow the vein through the ulcer or to excise the ulcer, since removal of the engorged vessel down to a point immediately above will cause it to heal permanently. Under the same conditions, but with a large and very much indurated ulcer, the decision may be more difficult. Here the infection and scar may be so deep that even removal of the vein which, so to speak, feeds it will not alone insure healing. The

ulcer may then be excised, and if the wound edges cannot easily be approximated, the raw surface should be skin grafted.

But now suppose that the tests disclose the presence of leaking perforating veins. The ulcer area may be widely pigmented and scarred. There may be one large or several small ulcers. Such are the conditions which frequently arise after phlebitis. Whatever decision is then come to in respect to the treatment of the ulcers themselves, the veins of the lower leg must be fully dissected and, as far as possible, the perforating veins found and tied on the deep fascia. This may mean dissecting in densely scarred infected tissues. It will usually mean the excision of ulcers down to sound tissues even if the dissection exposes bone, muscle or tendon sheath. Such dissections require the greatest gentleness and patience. Wounds must be very loosely closed. Operations may have to be done in more than one stage. The time and trouble is well spent if a working man or woman is given a sound, useful leg.

PHLEBITIS.

There remains to be discussed the treatment of phlebitis. I have already described the conditions which may arise after an acute inflammation of previously normal veins. During the attack itself the inner side of the thigh and calf are often red, swollen and tender. The veins themselves are clotted. The lower leg is infiltrated and oedematous. Evidently the process is a pretty general one, and I do not believe that at this time anything in an operative way can do other than harm. Elevation and rest alone are indicated. Even as the process subsides the most which can be done is directed toward the palliation of future trouble. To this end the patient should not use the leg at all until all signs of inflammation are gone. From then on for several weeks exercise of the leg in bed may be permitted. While getting up, the leg should never be allowed to hang down. Walking is better than standing. If swelling occurs, the leg must be kept elevated in every idle moment. Bandaging may be of great assistance. Probably the venous surface circulation is never to be what it was, though the deep circulation is rarely disturbed. In milder cases no permanent bad effects beyond a little swelling on long standing may be left. But when the infection and clotting have been widespread, the ulcers of the type I have already described are prone to occur even within a few months. No time or trouble is badly spent which mitigates at all the complications of phlebitis.

The phlebitis of veins already varicose is a different matter. The dilated vessels are tightly filled with clot; the skin about them is often red and oedematous; but the process is comparatively local. The acute stage usually subsides rapidly upon rest in bed though suppuration in some one part occasionally occurs. On the whole,

as soon as the worst of the process is over the best treatment is probably excision of the thrombosed veins. The only danger is the possible presence of the clot in the region of the saphenous opening, for in dividing and tying off the stump of the saphenous vein, a portion of the clot may perhaps be forced into the femoral. In that case a fatal pulmonary embolism will result. It is a safe rule, therefore, to postpone excision if thrombosis is evident as high as this point. Excision of the varicose veins should not even then, however, be abandoned since phlebitis is very likely to recur; and moreover, though one might expect the organization of a clot to lead to obliteration and so to the cure of varix, it never does so. When operating upon the thrombosed vessels, the inflamed skin adherent to them must be removed at the same time. Thus, unusual care in making and closing wounds is essential. In spite of this difficulty, operations for the removal of clotted varicose veins are remarkably satisfactory. They will usually save the patient considerable time and suffering.

SUMMARY.

Varicose veins of the legs are valveless superficial veins no longer able, when the body is upright, to carry blood in the direction of the heart.

The cause of varix is usually hard physical labor or childbearing. The valves may be destroyed by phlebitis, in which case the soft tissues of the legs are left more or less inflamed and scarred. Rarely and without known cause, the veins become varicose in early life.

The great saphenous vein, draining the superficial tissues of the inner side and front of the thigh and calf, is the vessel almost invariably affected.

It is possible by appropriate tests to determine the completeness of surface varicosity and to decide whether the perforating veins are diseased.

The deep veins are almost never varicose and may be counted upon to carry the load of the surface circulation.

Varicose ulcers occur because (1) the skin associated with varicose veins is often badly nourished, and (2) because it is easily traumatized and infected.

The familiar large tortuous type of varicose vein is readily cured by appropriate operation.

Ulcers are to be treated more or less radically according as varicose perforating veins are present or absent, and according to the degree of infection and induration surrounding the ulcer.

Post-phlebitic varix is to be diagnosed by a history of phlebitis, the presence of small sequestered veins, and, in advanced cases, by the large amount of diffuse induration and oedema of the calf. Ulcer usually is present in this disease. It is intractable to palliative treatment and al-

most invariably requires excision. Operations upon post-phlebitic varix and ulcer are difficult and show a far lower proportion of cures than those performed for the simple type of surface varicosity.

Acute phlebitis in veins previously normal, such as occurs with typhoid and after childbirth, should be conservatively treated. Convalescence should be prolonged and restoration to active life slow.

Acute phlebitis affecting veins already varicose should be treated by excision.

PRESENTATION OF A BAS-RELIEF OF PROFESSOR D'ESPINE TO THE BOSTON MEDICAL LIBRARY.

On May 1, 1922, a letter was received by Dr. John W. Farlow, Librarian of the Boston Medical Library, from Dr. Charles G. Cumston, formerly of Boston, but now for a number of years Lecturer on Medical History at the University of Geneva, Switzerland, containing the following: "I am sending in your care a replica of the bas-relief of Prof. D'Espine struck on the occasion of his retirement from the University of Geneva, having attained the age limit of seventy-five years. Only forty replicas were made for his former students and friends. This replica I offer to the Boston Medical Library, and if you have no objection, I should like to have Dr. John L. Morse present it in my name, simply because he is conversant with Dr. D'Espine's work and would be able to make some interesting remarks in this respect."



The bas-relief, of which an illustration is here given, was presented to the Boston Medical Library on May 15, 1922, by Dr. Morse, who gave

the following sketch of the medical career of Dr. D'Espine:

"Dr. Cumston has kindly asked me to present to the Library this replica of the bas-relief of Professor Adolphe D'Espine, which was struck on the occasion of his retirement from the University of Geneva at the age of seventy-five years. Jean-Henri Adolphe D'Espine was born in Geneva, February 20, 1846, and studied medicine in Paris, where he took his medical degree in 1873. The title of his Inaugural Dissertation was 'A Contribution to the Study of Puerperal Septicemia.' He was elected Professor of Internal Pathology at the University of Geneva in 1876, and later was made Professor of the Diseases of Children, both of which positions he held until his retirement in 1921. He is a corresponding member of the Paris Academy of Medicine, the Academy of Medicine of Turin and also that of St. Petersburg.

"In spite of, or perhaps because of, his pathological affiliations, he early became interested in children and their diseases, as is shown by the fact that in 1877 he published with Prof. Picot a 'Manual of the Diseases of Childhood,' which was for many years one of the standard books on children's diseases, not only in Switzerland and France, but also throughout Europe; it was translated into German, Spanish and Greek, and in 1885 was crowned by the Academy of Medicine of Paris. The last edition appeared in 1899.

"Professor D'Espine has always been an investigator and a leader in the advance in our knowledge of children and their diseases and has contributed many articles to medical journals, among the most noteworthy of which are those dealing with cirrhosis of the liver in children, diphtheria and scarlet fever. He is probably best known in this country because of the 'sign' which bears his name. This 'sign,' to which he first called attention in the fourth edition of his 'Manual' in 1889, is a whispering sound heard after the spoken voice over the spinous processes of the vertebrae. The term 'D'Espine's sign' has been applied to many other sounds heard in this region, but it is this whispering sound after the spoken voice which D'Espine described as his 'sign,' and for which he claimed priority.

"Although Prof. D'Espine was retired on account of having reached the age limit of seventy-five years, he is, I am informed by a number of people who have seen him within a year, very alert for a man of his age and mentally as sound as most men of fifty.

"I am sure that the Library will join me in thanking Dr. Cumston for his generous gift and in sending our best wishes to Prof. D'Espine for many years of activity in his chosen field."

In concluding, Dr. Morse presented to the Li-

brary an autograph letter written to him by Prof. D'Espine in 1921 containing references to the "sign" and its meaning. This letter, of which portions are here given in translation, will be preserved with the replica, at Dr. Morse's request.

Professor D'Espine writes: The description of the "sign" which I gave, and which is still accurate today, is contained in the *Bulletin de l'Académie de Médecine*, Paris, 1907, vol. 57, page 167. Another important communication, entitled "Note on the diagnosis of simple bronchial adenopathy in acute and subacute affections of the chest in children" appeared in the same journal for July 23, 1907. To establish the fact that the "D'Espine sign" is due to tuberculosis of the bronchial glands (which is generally the case), there should be the positive skin-reaction after the use of Koch's Tuberculin. This is almost always present when the "sign" has persisted for more than six months.

I may mention an article on the same subject by Dr. Ethan Allen Gray, of Chicago, in the Transactions of the Fourth Annual Meeting of the National Association for the Study and Prevention of Tuberculosis. And in the *Schweizerische medizinische Wochenschrift* for June 30, 1921, there is an illustrated article on the "D'Espine sign" by Dr. Th. Reh, with a very complete and up-to-date bibliography of the subject.

Prof. Dr. Ad. D'Espine

After the remarks of Dr. Morse, the different editions of the Manual of Dr. D'Espine and Dr. Picot were shown and also the periodicals containing the references mentioned in the letter to Dr. Morse. These books and journals and the bas-relief are all in the Boston Medical Library, where they can be examined by any one interested in the work of Prof. D'Espine. The fifth edition of the Manual in the Library is a presentation copy from the author to Dr. Cumston and the second edition was a present from Dr. T. B. Curtis, and is inscribed "With thanks and cordial friendship of your old chess-partner, Ad. D'E. Geneva, 27 Oct., 1879."

The bas-relief and the autograph letter were received with thanks by the Medical Library through its Executive Committee, and the Librarian was requested to convey to Dr. Cumston the gratitude of the Library for his generous gift.

JOHN W. FARLOW,

127 Bay State Road, Boston

THE BOSTON Medical and Surgical Journal

Established in 1835

Published by The Massachusetts Medical Society under the jurisdiction of the following-named committee:

For three years WILLIAM H. ROBEY, Jr., M.D.
ROGER I. LEE, M.D.
ROBERT B. USGODD, M.D.
For two years JAMES S. STONE, M.D.
HORACE D. ARNOLD, M.D.
CHANNING FROTHINGHAM, M.D.
For one year HENRY GAGE, M.D., *Chairman*.
EDWARD C. SRETTER, M.D.
EDWARD W. TAYLOR, M.D.

EDITORIAL STAFF.

DAVID L. EDSELL, M.D.
WALTER B. CANNON, M.D.
REID HUNT, M.D.
ROBERT W. LOVETT, M.D.
FRANCIS W. PEARSON, M.D.
JOHN F. SUTHERLAND, M.D.
S. BERT WOLBACH, M.D.
GEORGE H. MINOT, M.D.
FRANK H. LAHEY, M.D.

WALTER P. BOWERS, M.D., *Managing Editor*.
GEORGE G. SMITH, M.B., *Assistant Editor*.

SUBSCRIPTION TERMS: \$5.00 per year in advance, postage paid for the United States, \$7.50 per year for all foreign countries belonging to the Postal Union.

Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the printer with galley proof of paper. Upon written request, authors will be furnished free one hundred eight-page reprints, without covers, or the equivalent in pages in articles of greater length.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to The Boston Medical and Surgical Journal, 126 Massachusetts Ave., Boston, Mass.

THE ELECTRONIC REACTIONS OF ABRAMS.

WHEN the Greeks placed their wooden horse before the walls of Troy, the Trojans marvelled at it as one of the wonders of the age, and accepted it, vastly to their discomfiture. When Dr. Albert Abrams, of San Francisco, announced that he had discovered a method of diagnosing disease by means of the electronic reactions of the body, he soon gathered about him a number of credulous individuals, mostly osteopaths, who accepted his doctrines and hailed him as "the greatest of all medical men."¹

These 300 or more² disciples of Abrams, scattered throughout the country, have organized classes in which, for a fee of two hundred dollars per pupil, they teach this method to others. *Pearson's Magazine* (June and July, 1922), has declared itself an ardent champion of this "revolutionary discovery," and, fortified by an article by Upton Sinclair, is prepared to force it down the throat of the medical profession.

This propaganda, written up in a sensational way and very cleverly interlarded with a few scientific and many pseudo-scientific facts, is bound to appeal to the less discriminating type of reader, especially if he suffers from some chronic ailment. The JOURNAL feels that the matter is of sufficient importance to be presented briefly but accurately, together with as much

comment as space will allow upon the probable correctness of the Abrams hypothesis.

The essence of the theory lies in the belief propounded by Abrams "that all material things are radio-active and that if sufficiently delicate apparatus can be devised, the degree of radio-activity of all matter can be measured in such a way that when its radio-active characteristics are ascertained, it would be possible from this data to determine the actual substance being examined, without ever seeing it."³

The radio-activity of the individual is manifested by his person, by a few hairs, by several drops of blood, or even by his handwriting! From the last, information can be gained as to the age, sex, approximate height and weight, condition of health and nationality of the writer. Even the nationality of his parents may be so determined. The radiations from an individual's handwriting pass toward him, if he is alive; if he is dead, his writing no longer "vibrates in resonance with him."⁴ This fact, however, does not prevent Abrams from ascertaining from the writing of persons long since deceased the nationality and the state of health of the writer. Dr. Samuel Johnson suffered from acquired syphilis (cerebro-spinal) and tuberculosis; Samuel Pepys, Edgar Allen Poe, Bret Harte and Henry Wadsworth Longfellow all had congenital lues.⁵

Not only the living body, but even bits of tissue hardened in 4% formalin, give the characteristic reaction for the disease which is present. Unfortunately the only diseases recognized thus far are carcinoma, sarcoma, tuberculosis, syphilis, colicsepsis and streptococemia.

The radio-activity which yields this information can be detected only by means of the reactions which it arouses in a human subject. These reactions consist in an increase in vascularity of certain abdominal organs; this manifests itself by increased dullness upon percussion over these organs, or by increased friction when a glass or rubber wand is rubbed across the overlying areas. We return to the original source for a description of the technique employed in eliciting these reactions.⁶

"Let us enter a laboratory where diagnosis is being made by electronic methods. In the subdued light, we see a young man stripped to the waist and the diagnostician is percussing various areas of his abdomen and carefully noting the variation in percussion sounds. This young man is called the 'subject' (or re-agent) and is facing the geographical west, which has previously been carefully determined by means of the compass."

"Beside the living human 'subject', the apparatus required is as follows:—The 'Dynamizer', which is merely a specialized type of condenser and consists of a little round black wooden box containing metallic contact points

from which grounding wires run to the water pipes or radiator. From the metallic top of this condenser passes a short insulated wire to the 'Reflexophone,' which is simply a specialized type of triple rheostat, capable of measuring up to a total of 61 Ohms. From this rheostat passes another insulated wire having on its free end a small aluminum electrode which is applied to the forehead of the young man being used as the 'subject.'

"Here, then, is the complete apparatus required for making our electronic diagnostic reactions; the Condenser (or Dynamizer), the Rheostat (or Reflexophone), and the automatic reflex nervous mechanism of the living human 'subject.' (Dogs and other animals have also been used experimentally and have given good results in this work.)

"PRACTICAL TESTS.

"Let us conduct an experiment with a piece of cancer tissue preserved in formalin solution in a small bottle. This bottle is placed in the Condenser and the Rheostat is set at 50, which has been shown to be the vibratory rate for carcinoma. It would be entirely immaterial whether actual cancer tissue were being used or some blood from a patient having carcinoma—the reaction would be the same, because the blood itself would tell precisely the same story as the cancer tissue.

"Previous to the experiment, the abdomen of this young man has been percussed all over, in order to determine his normal degree of resonance for that particular time.

"After the electrode from the Rheostat has been placed upon his forehead, the lapse of fifteen or more seconds is required, after which careful percussing will note a beginning dullness in an area about two finger-breadths in height and extending for perhaps six or eight inches across his abdomen at the level of the umbilicus. This particular area will soon become very noticeably dull upon percussing, and if the electrode be then removed from his forehead, the dullness will within a few seconds be replaced by the previous resonance. This test can be repeatedly made and will always give the same definite reaction upon the specified area of our 'subject's' abdomen.

"Many physicians find difficulty in differentiating between the delicate shades of pitch and tone when using percussing, and it is, therefore, fortunate that a way has been found whereby they may secure their electronic reactions by other means. During some of his constant laboratory experimenting Dr. Abrams found, by the use of a pith-ball charged with static electricity, that the area of his 'subject's' abdomen which was dull upon percussing was also throwing off more energy than the surrounding tissues, due to the increased vascularity of the underlying organs. The outcome of this simple discovery was perfectly logical, as, indeed, is every other step of the entire procedure when its fundamental

principles are intelligently understood. He found that if a glass rod or rubber wand, properly charged with static electricity by brisk rubbing with silk or wool, were swept over the 'subject's' abdomen, it would become noticeably retarded in its progress across that particular area which was dull upon percussing—all other areas being perfectly smooth. It has been found by prolonged demonstration that the glass rod or rubber wand method is fully as accurate as the percussing method, and may even be used at times for even more delicate reactions.'

Once the diagnosis is established, the disease can be checked by imposing upon it its own "vibratory rate." This is done by means of a machine called the "oscilloclast."

The treatment of certain diseases by means of particular drugs has been successful because those drugs have possessed the same vibratory rate as the disease itself. It is not claimed for electronic therapy that it will restore damaged tissues to a normal condition. All that it does is to deprive the disease of its vitality. A cancer, for example, loses its malignancy when so treated.'

The cleverness of the above outlined theory lies in its immunity from attack. It is so indefinite that you cannot get at it. A thorough physicist realizes its fundamental absurdities. If, however, he objects to Abrams' contention that "all material things are radio-active" Abrams replies that they may not be radio-active by ordinary standards, but when measured by his vastly more delicate tests they prove to be so.

As a matter of fact, radio-activity is as definite an attribute as fluidity. A radio-active substance sends out either corpuscular radiation (alpha or beta rays) or electro-magnetic radiation (heat, light, x-rays or gamma rays). These radiations exert perfectly well-known influences upon their surroundings. In no case do they exert influences which could be conducted along a wire as described by Abrams. If the little box which he describes as the Dynamizer were a condenser, the radiations could cause a leak of electricity between the plates of the condenser, providing a difference of potential is maintained between these plates. The only variation of this leak which we could recognize would be a change in the amount of current. Abrams' apparatus is not adequate to make such measurements.

It is a physical impossibility for such a device to transmit anything correlated with the "vibration frequency" of the electromagnetic radiations (if there be such); the corpuscular radiations do not have the attributes of vibration frequency.

Let us assume for the moment, however, that some vibratory rate is communicated to the subject.

This vibration is alleged to produce definite, constant areas of vasodilation within the abdo-

men. The areas over which dullness is supposed to appear correspond with no anatomical vascular units. What organ or combination of organs, for example, can give the carcinoma dullness—"An area about two finger-breadths in height and extending for perhaps six or eight inches across his abdomen at the level of the umbilicus"?³

The "reading" of the reaction by Abrams' methods of percussion or stroking with a wand is absurdly inexact. Percussion is never an accurate method of examination, for the force of the blow is not constant. The abdomen, furthermore, is a cavity in which, owing to intestinal peristalsis, areas of dullness are constantly changing. The degree of resistance encountered in stroking the skin with a glass or rubber wand is an even less reliable indicator; the friction developed depends upon the moisture of the skin, upon the muscular effort put forth in holding the rod against the skin, and upon the protrusion or retraction of the abdomen caused by the respiration. By means of these extremely coarse methods, a reaction admittedly too delicate to be measured by the finest instruments yet devised by man, is read not only qualitatively but quantitatively.

The application of the electronic reaction to the cure of disease is completely at variance with the modern theories (Twentieth Century or Einstein's Theory) of radiation, and is not in accordance with the experimentally established facts of absorption and emission of radiation.

It may be that Dr. Abrams knows of some method of research which makes unnecessary the laborious yet nevertheless definite experiments of other physicists. In the presentation of his theory he does not describe the fundamental experiments upon which so momentous a discovery as his should be based. In regard to the results of the clinical application of his theory he again rejects that method of scientifically controlled experimentation which, up to now, has been demanded of those who would establish new theories in the world of science. Abrams was offered a ward in a San Francisco hospital for the scientific demonstration of his methods, but he refused the opportunity.

Yet, free as it is from any true scientific basis, Abrams' theory, upon superficial acquaintance, has a distinct appeal. Its proponents take advantage of the recent popular interest in Radio, and impress the reader by the free use of such terms as "vibrations," "wavelengths and electrons. Many of the alleged "cures" have been performed upon a pathological condition demonstrable by no other method. Relief of symptoms can, in many instances, be attributed to coincidence or to the power of suggestion wielded by such a novel method of treatment.

The outstanding fact is this: the Electronic Theory of Abrams, in its fundamental concep-

tion, is directly opposed to many of the experimentally established laws of modern science; it cannot be accepted unless one is ready to cast aside all of the accumulated evidence of physics and mathematics in favor of a naked hypothesis unsupported by a single basic experiment.

REFERENCES.

- ¹ Pearson's Magazine, June, 1922, p. 7.
- ² *Idem*, p. 8.
- ³ The Electronic Reactions of Abrams. F. A. Cave, D.O.M.D. (Read before the annual convention of the Eastern Osteopathic Assn., Atlantic City, N. J., April 28, 1922. Endorsed by Dr. Albert Abrams, May 14, 1922.) P. 9.
- ⁴ Pearson's Magazine, July, 1922, p. 16.
- ⁵ *Idem*, p. 15.
- ⁶ *Vide* Reference No. 3, pp. 16-19.
- ⁷ Catechism of the Electronic Methods of Dr. Albert Abrams, F. A. Cave.

ANTIVACCINATION LECTURE BY RADIO

In the *Christian Science Monitor*, under date of July 29, 1922, there is the report of the lecture by Henry D. Nunn, manager and general counsel of the Medical Liberty League, sent broadcast by radio from Medford Hillside, Mass. In this message it is asserted "that the percentage of fatalities of smallpox epidemics has been greatly increased in the Philippines, where vaccination is preëminently extensive and that a similar tendency is observed in Japan." Further, it is claimed that vaccination is questioned by a large proportion of thinking people and that the great majority of those who believe in vaccination, including most physicians, take vaccination purely on faith without giving the subject any real thought.

He then propounds such questions as "what is vaccination?" and "is vaccination harmless or dangerous." He states that there were 10,000,000 vaccinations performed in the Philippines from 1905 to 1910, yet in 1918, 1919 and 1920 there were 162,000 cases of smallpox, of which 71,000 were fatal. During this latter period of three years he states that there were 15,600,000 vaccinations, but that smallpox is becoming more deadly in that country. He says that in the 20-year period ending in 1908 there were in Japan 288,000 cases of smallpox, of which 77,000 were fatal. He then goes on to say that among our soldiers in the Philippines from 1898 to 1920 there were 737 cases of smallpox, with a mortality of 261.

This lecturer evidently feels that his most telling argument lies in the fact that some persons who have been vaccinated have developed smallpox, but he neglects to state that in the few instances where smallpox has developed in persons who have had effective vaccination there are, as a rule, no deaths.

He states that smallpox virus is used to produce vaccine matter in this state through cultivation in the calf. He neglects to state, however, that the smallpox virus is only used to produce the initial inoculation of the calf and the vaccine finally applied to human beings is the end-product of successive inoculations for

a period of not less than five years, which is an explanation quite logical to well-informed physicians. He ignores the statements of Heiser in the *Journal of the A. M. A.*, July 1, 1922, and the letter to this JOURNAL by Major-General Leonard Wood, explaining the situation in the Philippines, and omits the great illustration of the record of vaccination in Manila, where smallpox was completely stamped out under the administration of this Government. The subsequent development of smallpox is perfectly well explained by the facts, for vaccination was for a period paid for at a per capita rate and the operators were more inclined to secure income than to perform vaccination. That a great deal of impotent vaccine has been used in the Philippines is undoubtedly true.

Our physicians will relish the coarse humor of the statement that physicians have not given the subject real thought. The statement is controverted with all modesty, but we can claim that Major-General Wood and Dr. Heiser are thinking men. Dr. Heiser is now in the Philippines and we shall soon have a different story.

The State Department of Health is in possession of much material on the whole subject which will probably be put before the public at an opportune time. For the comfort of our citizens it may be stated that no valid complaint has been made of the quality of virus prepared in this state during the past five years, although successful results may not follow in those cases where the arm has been treated with potent antiseptic washes.

A strong argument in favor of vaccination appears in the Statistical Bulletin of the Metropolitan Life Insurance Company for July, 1922. This great organization studies the problems of life and death in a scientific spirit for the purpose of applying knowledge to the business of life insurance. If it could be found that vaccination maims and kills and does not prevent smallpox, or, further, if vaccination conveys syphilis, this company would ally itself with those who are opposed to vaccination. The following quotation from the Bulletin shows the attitude of the company.

"Students of the prevailing worldwide menace of smallpox have seen many statements from anti-vaccination propagandists that the sad experience of the Philippines in 1918 and 1919 was a repudiation of the principals of modern public health measures for smallpox suppression. These statements are mere allegations that 50,000 smallpox deaths occurred in the face of systematic, persistent vaccination. The real truth is that the practice of effective vaccination had been exceedingly lax since the general campaign of 1909 or thereabouts and that most of the 50,000 deaths occurred among the children and other elements of the population unprotected by the indifferent pursuit of vaccination in recent years in the Islands. The age statistics given by Drs. Heiser and Leach for Pangasinan

and for Manila show a predominance of both cases and deaths among the unvaccinated. A careful review of these facts will make it possible for American health officers to refute the diligently circulated misstatements of the anti-vaccinationists."

PHYSICIANS IN CONGRESS.

It is an interesting fact that physicians as a class are not often inclined to seek political office. There are five hundred and thirty-one members of both houses of Congress, but only eight physicians are found among them, although one other has an honorary degree of M.D., as shown by the report of the National Health Council. An examination of the Congressional Directory shows the following named doctors of medicine: Senators, Lewis Heisler Ball of Delaware, M.D., from the University of Pennsylvania, 1885; Joseph Irwin France of Maryland, M.D., from the College of Physicians and Surgeons, Baltimore, fellow of A. M. A.; Seldon Palmer Spencer of Missouri, although a lawyer, has an honorary M.D. from Missouri Medical College, because he lectured on Medical Jurisprudence.

Representatives: John Joseph Kindred of New York, M.D. from Hospital College of Medicine, Louisville, Ky., also record of study in post graduate work at University of N. Y. and University of Edinburgh, graduating from the department of mental disease of the latter. He is also an LL.B.; Caleb R. Layton of Delaware, M.D. from University of Pennsylvania; Ladislas Lazaro of Louisiana, M.D. from St. Isidore's College, New Orleans; Archibald E. Olpp of New Jersey, M.D. from University of Pennsylvania; John William Summers of Washington, M.D. from Kentucky School of Medicine and Louisville Medical College, with post-graduate studies in New York, London, Berlin and Vienna; Lester D. Volk of New York, M.D. from Long Island Medical College, formerly editor of the *Medical Economist*. He is also a lawyer and has devoted himself to law since 1913.

Dentistry is represented by Representative Roy C. Woodruff of Michigan, Doctor of Dental Surgery, Detroit College of Medicine. Pharmacy by George W. Edmonds of Pennsylvania, a graduate of the Philadelphia College of Pharmacy; and Public Health by R. S. Malony of Massachusetts, who was formerly director of public health in Lawrence, Mass.

Lawyers make up the great majority of the members of both branches.

Considering the training and work of physicians, it is not surprising that few care to enter the arena of political contests. Physicians are aggressive in combating disease, but few enjoy that kind of controversy which is a feature of campaign debates; but whenever a well informed

physician becomes a member of a body that deals with the various problems of preventive medicine, his experience is of the greatest value to the state, and in many other departments of state activities he is better qualified than most men to appreciate meritorious measures and detect unworthy or dangerous motives. It is becoming more evident in these later days that one of the great concerns of the state lies in the mental and physical well being of its citizens, and a large percentage of physicians in legislative bodies would help in advancing sound laws and rejecting unworthy proposals. Massachusetts has been indebted in the past to a comparatively few physicians who have sacrificed financial interests in taking on legislative responsibilities. There will probably be others who will take up this work in the future, but there is little hope that the numbers will be large enough to have any commanding influence in Congress or in state legislatures.

NEWS ITEMS.

CHANGES IN THE FACULTY AT HARVARD.—Dr. Edward P. Richardson has been appointed assistant professor of surgery at the Medical School of Harvard University, Boston. Dr. Reginald Fitz, for the last two years professor of medicine, University of Minnesota, has been named associate professor of medicine. Leonard T. Troland, for six years instructor in psychology, has been promoted to an assistant professorship. Dr. Jacques Bronfenbrenner has been appointed assistant professor of bacteriology; Dr. Alice Hamilton, assistant professor of industrial medicine; Dr. George Shattuck, assistant professor of tropical medicine; Dr. David Cheever, assistant professor of surgery; Dr. Lloyd D. Felton, assistant professor of preventive medicine and hygiene, and Dr. James L. Gamble, assistant professor of pediatrics. Dr. James S. Stone and Dr. John Homans have been appointed instructors in surgery, and Drs. William H. Smith and Frank H. Hunt, instructors in medicine.—*Journal A. M. A.*, August 5, 1922.

WEEK'S DEATH RATE IN BOSTON.—During the week ending August 5 the number of deaths reported was 169 against 158 last year, with a rate of 11.54. There were 20 deaths under one year of age against 28 last year. The number of cases of principal reportable diseases were: diphtheria, 45; scarlet fever, 8; measles, 40; whooping cough, 44; typhoid fever, 2; tuberculosis, 22. Included in the above, were the following cases of non-residents: diphtheria, 4; scarlet fever, 2; tuberculosis, 2. Total deaths from these diseases were: scarlet fever, 1; measles, 2; typhoid fever, 2; tuberculosis, 13. Included in the above, were the following cases of non-residents: tuberculosis, 2.

DR. SHEPPARD APPEALS.—Dr. Philip A. E. Sheppard, through his attorney, has appealed to the Supreme Court, asking that the action of the Board of Registration in Medicine in revoking his certificate as a registered physician be reviewed and set aside.

MALPRACTICE SUITS IN IOWA.—The Iowa State Medical Society reports that attorneys' fees for medical defense of its members amounted to \$4,914.94 for the previous year and that twenty-six cases are now pending.

Miscellany.

MEDICAL RESEARCH IN AMERICA.

Dr. W. S. LAZARUS BARLOW, Professor of Experimental Pathology at the Middlesex Hospital of the University of London, who has been visiting the medical centers in this country, has stated that the resources for medical progress in America exceed those of any other country, especially along research lines. He explains this in referring to the wealth of the United States, together with extraordinary facilities. With justifiable loyalty to his own country he says that "We in England have the men, but we have not the facilities," and further raises the question as to the ability of Americans to develop men of a type equal to those of the older country. If such men can be found in America he concedes the probability of the greatest possible progress in medical research. He explains his meaning in allusion to facilities by referring to the Crocker Institute for Cancer Research, the Rockefeller Foundation and our supremacy in the amount of available radium.

We trust that we, as a nation, are as modest as any other, but we may be pardoned for believing that in addition to the facilities we are developing the kind of men who will carry on the highest type of research work.

THE LEGAL OWNERSHIP OF A STILL.

In advertisements the dealers in stills recommend the purchase of these utensils for the purpose of distilling water, with the claim that distilled water is valuable in the treatment of some diseases or may be useful in eliminating the danger of water-borne diseases.

In order that physicians may know the law the following letter is published.

Treasury Department, Internal Revenue Service, Boston, Mass.

Mr. Editor:

Your letter of July 31st received. Section 18, Title 2 of the National Prohibition Act reads as follows:

"It shall be unlawful to advertise, manufacture, sell, or possess for sale any utensil, con-

trivance, machine, preparation, compound, tablet, substance, formula direction, or recipe advertised, designed, or intended for use in the unlawful manufacture of intoxicating liquor."

However, stills not intended for use in the production of Distilled Spirits may be legally purchased and possessed providing the purchaser of the still shall register the still with the Collector of Internal Revenue on certain forms prescribed. The procedure for the legal purchase and possession of a still is as follows.

The prospective buyer furnishes the vendor with affidavit in triplicate to the effect that the still he intends to purchase is not to be used for Distilled Spirits, but is to be used for some other purpose specified. The vendor then requests permission in writing, to which is attached one copy of the affidavit, from the Collector of Internal Revenue for the District in which he is located, to remove the still to the prospective buyer, which permission is granted. The Collector's Office then notifies the purchaser that he should register still on forms 26, which are furnished him. This completes the Federal requirements for the purchase and registry of a still.

Respectfully,

Malcolm E. Nichols,
Collector.

WISCONSIN BARS OUT FILLED MILK.

By legislation and court decisions the people are winning the fight against all so-called milk compounds. The decision in Wisconsin Supreme Court, July 20, in the now celebrated "Hebe" case brought by the Carnation Milk Products Company and the Hebe Company, upheld the state law forbidding the manufacture and sale of the compounds of skimmed milk and vegetable oil. The Carnation Milk Products Company, plaintiffs in the case, had sought to enjoin J. Q. Emery, dairy and food commissioner, from enforcing the law as against their product known as "Hebe."

This much advertised compound, which the Court found to be similar in taste, odor, appearance, consistency and manner of packing to evaporated milk, has been manufactured by the Carnation Company and sold to its subsidiary, The Hebe Company, for five years. It has been advertised by certain dealers in the newspapers of Wisconsin as "milk" or "compound of milk", and has been sold by a number of retailers in Wisconsin as "milk" or "evaporated milk."

This and other compounds are shipped out of the state and advertised and sold by many dealers in other states as substitutes for milk. Labels on the cans of some of the compounds suggest that this product is practically equivalent to or better than genuine evaporated milk.

The supreme court based the right of Wis-

consin to outlaw "Hebe" and other milk compounds on the police power of the state, and declared the law valid for three reasons:

1. Because the law is intended to prevent fraud and deception.

2. Because it protects public health and welfare.

3. Because it promotes the general prosperity by preserving a great industry of the state.

Justice Charles H. Crownhart, who wrote the decision and the accompanying statement of fact, pointed out that the history of legislation relating to filled milk was most persuasive. "It will be seen," said he, "that the compounds have been considered inimical to public welfare by a large portion of the people of this country."

He pointed out that thirty-three states had adopted standards for condensed or evaporated milk; that the manufacture and sale of filled milk had been absolutely prohibited in New Jersey, New York and Wisconsin; that five other states had prescribed standards for condensed or evaporated milk that in effect prohibit filled milk; and that three states had passed laws which permit filled milk to be sold as "imitation milk."

LIFE TABLES FOR STATES AND CITIES, 1920.

The Department of Commerce, Washington, announces that abridged life tables based upon the 1920 United States Census will soon be issued showing conditions in 24 states and 14 large cities, also in the territory of Hawaii.

Altogether these tables cover 74 per cent. of the total population of the United States. They show for these states and cities taken as an aggregate, that the expectation of life at birth is 55.23 for white males and 57.41 for white females.

According to these tables the longest lived people in the United States are the Kansans, the expectation of life at birth in Kansas being 59.73 for white males and 60.89 for white females. Wisconsin ranks next with 58.77 years for white males and 60.70 for white females. If a record as a standard of comparison be desired it may be found in the figures for females in the county of West Sussex, England, whose expectation of life, the highest ever published officially by any country, was 63.05 in 1911-12.

Washington, D. C., outranks all other of the 14 cities with 53.83 years as the expectation of life for white males and 59.83 for white females. Pittsburgh comes at the foot of the list with 47.16 years for white males and 50.42 for white females.

For Negro males in the large cities the expectation of life is 37.92 as compared with 51.55 for white males, a difference of 13.63 years. For

Negro females the figure is 40.28 and for white females, 54.77.

For purposes of comparison and to indicate progress, a table is included covering the census years 1910 and 1920. This, however, is restricted to the "original registration states" which include the six New England States and also New York, New Jersey, Indiana, Michigan, and the District of Columbia, since figures for other states are not available as far back as 1910. Within this area the expectation of life for white males has advanced from 50.23 in 1910 to 53.98 in 1920, an increase of 3.75; and for females it has advanced from 53.62 to 56.33, an increase of 2.71.

EXPECTATION OF LIFE
Original Registration States

| Year | Sex | Age 0 | Age 32 | Age 62 |
|-------|------------|----------|-----------|-----------|
| WHITE | | | | |
| 1920 | Males | 53.98 | 34.93 | 13.38 |
| 1910 | Males | 50.23 | 33.33 | 12.85 |
| | Difference | 3.75 | 1.60 | .53 |
| 1920 | Females | 56.33 | 36.12 | 14.01 |
| 1910 | Females | 53.62 | 35.40 | 13.70 |
| | Difference | 2.71 | .72 | .31 |
| NEGRO | | | | |
| 1920 | Males | 40.14 | 28.50 | 11.42 |
| 1910 | Males | 31.05 | 26.16 | 10.88 |
| | Difference | 9.09 | 2.34 | .54 |
| 1920 | Females | 42.16 | 28.82 | 12.12 |
| 1910 | Females | 37.67 | 28.33 | 11.96 |
| | Difference | 4.49 | .49 | .16 |

For those males who have reached the age of 32 the expectation of life is 34.93 years, and for those who have reached the age of 62, it is 13.38. For white females it is 36.12 at the age of 32, and 14.01 at the age of 62. These life tables show a marked improvement in mortality conditions among all classes between 1910 and 1920, except at certain ages between 17 and 32, these exceptions being due to the influenza epidemic.

While the various mortality conditions show that the chances of living are much more favorable among whites than among Negroes, the improvement among Negroes between 1910 and 1920 was slightly greater than among whites. Had it not been for the influenza epidemics of 1919 and 1920 the expectation of life shown for 1920 would have been considerably greater for both whites and Negroes.

AFTER-EFFECTS OF WARFARE GASES AND THEIR RELATION TO TUBERCULOSIS.

Lieutenant-Colonel H. L. Gilchrist, Medical Corps, U. S. A., has made a careful study of this subject and has prepared a report setting forth his conclusions.

The object of the dissemination of his opinions appears to be a desire to relieve the minds

of victims of gas poisoning of the impression that such persons are liable to develop tuberculosis for "large numbers of ex-soldiers are laboring under constant mental worry fearing" the development of tuberculosis. He endorses the opinion of Dr. John B. Hawes, Jr., who has emphasized the following points:

1st.—That it must not be taken for granted that a given process is tuberculosis, even with a suggestive x-ray;

2nd.—That the general appearance of robust health with marked symptoms, is against tuberculosis;

3rd.—That lung complications resulting from gas are usually basal and not apical processes;

and quotes from the report of Dr. James A. Miller, as published in the American Review of Tuberculosis, Vol. III, page 51, as follows: "There seems clear evidence that tuberculosis has not increased by the influence of the late war upon the armies and if anything, it has diminished the hazard of pulmonary tuberculosis, reports from France, Great Britain, Belgium and United States, all showing great decrease in tuberculosis during the later periods of the war.

His conclusions are given as follows:

1st.—That a large number of individuals were undoubtedly sub-standard in the beginning and would quite probably have broken down under any stress or strain.

2nd.—That the generally unknown effect of warfare gases has furnished many individuals a peg upon which to hang all manner of symptoms.

3rd.—That the period of time between our entry into the war and the present date, has offered ample opportunity for the onset of diseases totally unassociated with war wounds or exposure.

4th.—As to the incidence of pulmonary tuberculosis resulting from exposure to gas, it would seem that it is far from convincing that gas played any particular rôle in this connection and it is doubtful if the incidence of lung tuberculosis among ex-service men is much greater by reason of the part that gas played.

5th.—Those who claim to have developed tuberculosis a year after leaving the service, from conditions experienced in the Army, certainly have no basis for such assertion. They probably would have become tuberculosis patients even if they had never been in the Army.

6th.—There are two elements entering into this problem—one neurasthenia, where the men were gassed, usually very slightly, and believed sincerely that this was a factor in their illness; and second, mistaken diagnosis in many cases, especially those following influenza, in which instances of unresolved broncho-pneumonia occurred, leaving nodular patches upon which the diagnosis of tuberculosis was frequently based on x-ray plates.

These opinions should furnish much encouragement to ex-soldiers and physicians.

BABY HYGIENE ASSOCIATION.

The report of this organization for ten months of the year ending December 31, has been distributed.

Twenty-two welfare stations are maintained where instruction in proper feeding, care, and hygiene of infants and children is given. Visits to homes by nurses and dietitians are made and cooperation with public health authorities and social agencies on matters pertaining to child welfare is carried on.

The statistics are of great interest:

There were 15,894 infants and children cared for and 142,139 home visits made.

The infant mortality rate among those cared for has been reduced from 17.87 in 1920 per 1000 to 12.54 in 1921.

The city infant mortality rate for 1921 is 77.85. Financial pressure necessitated the reduction of the nursing force in the autumn.

The receipts for the year amounted to \$72,760.54 and the expenditures, \$74,583.26.

The report should be read by every physician, health officer, and social worker. The results obtained should be common knowledge. This organization shows how lives can be saved and health maintained among infants and children. The comparison of the mortality rate among those cared for by this association and the average rate among other infants and children places a definite responsibility upon municipalities. If health is purchasable, as has been claimed, society at large may be regarded as responsible for a large proportion of deaths among infants and children. This organization shows results which should make us ashamed of the average infant mortality rate.

INSTRUCTIVE DISTRICT NURSING ASSOCIATION.

MONTHLY HEALTH BULLETIN FOR AUGUST, 1922.

There were 163,684 visits made to 23,351 patients during the first 6 months of 1922, an increase of 15,756 visits and 2,655 patients during the same period last year. The increase occurred principally during the first three months, when there was an undue prevalence of acute illness.

Nursing visits increased by 19,078, while fewer purely preventive visits were made.

ACUTE AND COMMUNICABLE DISEASES.

Acute and communicable diseases this year jumped to 58% of the whole, from 38% of the entire work in the first half of 1921. This was a proportion encouragingly suggestive that the vital nursing needs of the community are being served. Influenza, pneumonia and other respi-

tory diseases are, of course, responsible for a large proportion of the increase, which, however, was also shown in some of the other diseases. There were 664 cases of measles as against 377 last year; erysipelas 90, against 46; a slight increase in diseases of the digestive system; 546 cases of burns, traumatism, fractures and sprains, against 403; also an increase in the diseases of the eye and ear. There were fewer cases of typhoid fever, whooping cough, chicken-pox and mumps.

CHRONIC DISEASES

There was a slight decrease in the proportion of chronic diseases, these being only 11% of the entire work. In opposition to the general decrease, cancer stood out, with 161 cases against 121 of last year.

MATERNITY.

Of the work, 24% was maternity work.

The results compare favorably with those of last year, the maternal death rate being 2.75 per 1,000; while the stillbirth rate for the prenatal cases dropped from 30 to 28.8 per 1,000 births.

The infant death rate under two weeks (prenatal cases) was 24.4 per 1,000, somewhat higher than last year.

There was a rather marked drop in the number of prenatal cases cared for, —purely preventive work,—2,695 this year, against 3,009 last.

There were 311 deliveries attended, 38 more than in the first six months of 1921.

BABY HEALTH WORK.

There were 1162 babies registered at the three Baby Health Clinics, a slight increase over last year. There was also a good increase in attendance at all these clinics.

The death rate was 15.1 per 1,000 babies under 1 year, a rate very much higher than last year, and one which accords with a general tendency throughout the country toward increased infant mortality.

No baby died of a digestive disease, while 5 babies died of pneumonia and 5 others who died were in a poor physical condition at birth.

CHILD HEALTH WORK

There were 469 children registered at the Child Health Clinic. Nine of the new children were found in perfect condition, the others averaging 2 defects.

Of the children who had diseased tonsils and adenoids, 58% were operated upon in hospitals and dispensaries.

Of the children with defective teeth, 58% were cared for, the majority of them at the Dental Clinic in the Hyde Park Health Center.

There were 15 nutrition clinics held in the Health Center for children found in the Health Clinic to be 7% or more under weight.

INCORPORATION OF THE AMERICAN SOCIETY FOR THE CONTROL OF CANCER.

THE following circular of information appears in the *Campaign Notes* of this society for July, 1922:

"On May 15, 1922, the society was incorporated under the membership corporations law of the State of New York. This step was taken after the judiciary committee of the Senate had decided against recommending the incorporation by special act of Congress of the charitable, benevolent and educational organizations, including this society, which had applied for national charters.

"The certificate of incorporation of the society states that 'its operations are to be principally conducted in the United States of America' and describes its purposes as follows:

"To collect, collate and disseminate information concerning the symptoms, diagnosis, treatment and prevention of cancer; to investigate the conditions under which cancer is found, and to compile statistics in regard thereto."

"The plan of organization of the society is now—

"1. A board of directors of five members which will have charge of its financial and legal affairs.

"2. An executive committee of 20 members which will have charge of its general activities and its field work.

"3. An advisory council of not to exceed 100 members which will advise with the board of directors and the executive committee in regard to the activities and management of the society.

"The officers and directors of the society for the first year are:

"Dr. Charles A. Powers, president; Dr. Howard C. Taylor, vice-president and chairman of the executive committee; Calvert Brewer, treasurer; Thomas M. Debevoise, secretary; Elsie C. Mead, chairman of the finance committee.

"The officers of the advisory council for the first year are:

"Dr. Edward Reynolds, chairman; Dr. Clement Cleveland, vice-chairman; Dr. Livingston Farrand, vice-chairman; Dr. George E. Armstrong, vice-chairman; Dr. Rudolph Matas, vice-chairman.

"The society is now in a position to receive the Lasker Fund and other gifts which may be made to it."

The society has ready for distribution a copy of the certificate of incorporation and the by-laws. Under membership several classes are provided for: (a) Donors—who shall give to the society \$5000 each; (b) patrons—who shall pay dues to the society of \$50 per annum; (c) sustaining members—who shall pay dues of \$25 per annum; (d) annual members—who shall pay dues of \$5 per annum.

Any persons who shall contribute \$1 per annum shall, subject to approval of the board of directors, be known as associate members, but without voting privileges.

CURABILITY OF INSANITY.

DR. GEXIL-PERRIN, secretary-general of the French League of Mental Hygiene, says that "the social scourge of insanity is both curable and avoidable, and that the asylum remains the tomb of chronic cases and thereby acquires the reputation of an institution at whose doors all hope must be abandoned. . . .

"The condition of a lunatic, from a medical point of view, is the same as was that of a tuberculous subject before the time of Pasteur. . . . Everything now done for tuberculosis can now be done for mental diseases. . . . The early diagnosis and preventive treatment of mental disorders can be and must be a matter for the organization and action of the state. . . .

"Since the psychopath is frequently a victim of self-neglect, and those so predisposed are unaware of the danger which they run, they must be actively confronted, without waiting for them to seek advice. To track down such individuals on their daily round of business, or study and lead them to the clinic, is a work which is already being performed in certain countries—notably in the United States.

"Encouraged by the Board of Mental Hygiene of New York, social psychiatry has been developed in America with the collaboration of large numbers of specially qualified assistants whose efforts have met with much success."

The article in full appears in the *World's Health* for June, 1922.

EXCERPTS FROM THE UROLOGIC AND CUTANEOUS REVIEW.

When it comes to differential diagnosis few of us carry a sufficiently large stock in trade. Thinning of the outer thirds of the eyebrows should lead one to suspect hypothyroidism.

Remember that an inflamed umbilicus in the adult may harbor the diphtheria bacillus, or the tetanus bacillus.

Do not be thrown off your guard by the trivialness of prickly heat; find out what is the matter with the patient.

A rare case may bring great profit to your pocketbook, but it should bring still greater profit to your stock of knowledge.

If you send your patients away with instructions written out fully, clearly, briefly, you will buy more bonds next year.

Remember that the over-treatment of syphilis may defeat its very purpose by breaking down tissue resistance and immunity.

Objectionable tattoo marks should be excised, or overlaid with a tattoo pattern that will obscure their objectionable character.

Do not forget that a pyoderma of the feet and legs of children may be kept up by flea bites; inquire as to their house pets.

Itching in the midline of the lumbo-sacral region, in the absence of a skin lesion, should lead one to look for an occult spina bifida.

Efficient therapy of an inflamed lesion of the feet may be frustrated if the patient continues to wear cordovan or other poorly ventilated shoes.

For a very waxy seborrhea of the scalp nothing is better than the cautious use of powdered white precipitate well rubbed into small areas of the scalp every day.

The Wassermann reaction in unskilled hands, like a rifle in the hands of one who does not know how to use it, may unsuspectingly go off in the wrong direction.

Pellicles of dandruff may adhere to hair shafts so as to closely resemble nits; use a lens, and do not embarrass yourself and the patient by improperly diagnosing pediculosis capitis.

In the presence of a difficultly curable disease, protect yourself by never failing to fully describe to the patient the ultimate evolution of the disease, lest he blame the change to alleged improper medication.

Unless you have more than a casual knowledge of radium therapy, all of your patients requiring radium should be placed under the care of a man possessing special knowledge of this element and its use.

Have your syphilitic patients weigh themselves regularly at least once a month. A loss of weight should immediately arouse suspicion of the possibility of over-treatment with mercury, and points plainly to the need of reconstructive treatment.

Do not dismiss a neurotic or timorous patient with the assurance that a lesion is "just nothing"; anything is always something; if the lesion is really negligible, always explain why; you will thereby give the patient his just due, and also protect your reputation from the charge of carelessness.

RED CROSS NOTES.

The Red Cross has appropriated \$1,500 from its relief fund for the benefit of victims of the Chicago disaster. Miss Ellen H. Campbell of the Holyoke Chapter is acting as chairman of the relief committee.

Officials of New York city have expressed appreciation of the service rendered by four-teen Red Cross nurses in caring for victims of the West Twelfth Street fire, July 18. Two persons lost their lives and more than thirty were injured. In addition to nursing service a can-

teen was established for assistance of homeless women and children.

Boston Metropolitan Chapter is giving free instruction in life-saving methods at six beaches.

The National Convention will be held in Washington, D. C., Oct. 9, 10 and 11.

A full-time health unit has been established at Rochester, Ind. The Rockefeller Foundation, the county, the city of Rochester, and the State Board of Health will share with the Red Cross and the Tuberculosis Association in financing the service.

Miss Alice Killelea has been appointed executive secretary of the Fitchburg Chapter.

THE SCARLET FEVER GERM.

R. W. PRYER, D.P.H., Detroit, Mich., in an article published in the *Journal of Laboratory and Clinical Medicine*, states his belief that this disease is caused by a spore-bearing organism which shows several varieties, "one of which is, under certain conditions, somewhat similar in its morphology to B. diphtheria and which may be a toxic producer." If subsequent study justifies this belief, a distinct advance has been made in this field, but the reading of the article leads to the fear that the writer may be over-enthusiastic.

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION.

THE second meeting of the Medical Women's International Association will be held at Geneva, Switzerland, from the 4th to the 7th of September, 1922. All members or prospective members are urged to be present. Each society of medical women throughout the world is invited to send one eligible delegate, and an additional delegate for every 100 members.

Interesting reports will be read by medical women from different countries, and the constitution of the organization will probably be revised in accordance with the provisions under which it was adopted.

Clinics in the different European cities may be visited en route. The attractions of travel in Europe are great this year. Practically all countries are accessible, and the Passion Play will be on at Oberammergau during the entire summer.

OPENING FOR A PHYSICIAN.—Dr. Walter L. Burrage, Secretary of the Society, reports having received information from a resident of Marshfield that a physician might secure a good practice there. Marshfield is an attractive coast town in Plymouth county, with a large summer population.

AMERICAN RELIEF ADMINISTRATION.

Moscow, July 3 (By mail).—Thirty-three physicians and surgeons, each in charge of one of the Moscow hospitals, have united in signing the following letter of thanks to Dr. W. D. Nickelsen, medical supervisor of the Moscow district for the American Relief Administration:

"At the moment when the Moscow city hospitals were insufficiently supplied with food and other necessities for the care and cure of the sick, the American Relief Administration came of its own accord to the assistance of those hospitals, supplying them regularly with medicines, instruments, things needed for the care and treatment of the patients, linen, blankets, gowns, and also took upon itself the supplementary feeding of the patients.

"This assistance has greatly improved the condition of the patients and has also helped to check disease in general.

"Being aware of the great good done by the humanitarian activities of the American Relief Administration, the chief physicians of the Moscow hospitals are conveying to that organization in the person of the chief of the Moscow section their sincere appreciation for its present activities and its readiness to continue that work in the future."

AWARD OF THE CHARLES G. MICKLE FELLOWSHIP.

This fellowship, under the control of the faculty of medicine of the University of Toronto, represents the income from a \$25,000 endowment by the late Dr. W. J. Mickle. The fellowship is awarded to physicians anywhere who have made distinct contributions to practical knowledge of medicine.

The award has been made to Dr. Harvey Cushing, professor of surgery at the Harvard Medical School and chief of the surgical service of the Peter Bent Brigham Hospital. Dr. Cushing has accepted the award but has requested the faculty of the University of Toronto to send one of its young graduates to work with him. He will transfer the money to this person.

Dr. Cushing, after graduation from the Harvard Medical School, was surgical house officer in the Massachusetts General Hospital. Later he went to Johns Hopkins, serving as professor of surgery for nine years, and after that time returned to Boston.

Dr. Cushing was elected president of the College of Surgeons at the last annual meeting and is an honorary fellow of the Royal College of Surgeons of England and Ireland. He served as director of Base Hospital 5, attached to the British army from May, 1917, to May, 1919.

The bestowal of this award is a recognition of

the position held by Dr. Cushing in the surgical world as well as of his service in the World War.

FRAMINGHAM MONOGRAPH No. 9.—This last of a medical series issued by the Framingham Community Health and Tuberculosis Demonstration deals with the Framingham epidemic and presents post-epidemic observations and will be reviewed later. This valuable contribution to the literature devoted to the problems of influenza may be procured by applying to the Community Health Station. The price is five cents a copy.

RECENT DEATHS

DR. GEORGE EDGAR LOTHROP, long identified with the theatrical profession, formerly a practising physician in Boston, died at the Massachusetts General Hospital, August 3, 1922, at the age of seventy-one. He was born in Providence, R. I., November 17, 1850, was left an orphan at the age of ten, supported himself by selling papers and finally worked his way through Dartmouth Medical School, taking his degree there in 1871. After some fifteen years of practice, Dr. Lothrop devoted himself to theatrical management, opening the Boylston Museum and later the Grand Museum. For thirty-five years he had been manager of the Howard Athenaeum. Among his memberships were the Elks, Masons and the Odd Fellows. In recent years he had lived in Brookline. He is survived by his widow and one son.

DR. PETER WHITE CODY, of Lawrence, a fellow of the Massachusetts Medical Society, died at his home, July 15, 1922, aged 64, from the effects of a fall.

He was a graduate of the College of Physicians and Surgeons, Keokuk, Iowa, in 1882, and joined the State Medical Society in 1916.

The profession will feel profound sympathy for Dr. Joel E. Goldthwait in the loss of his son, Vincent Bowditch Goldthwait, by accidental drowning, August 9, 1922.

REPRINTS.

A few reprints of *The Treatment of Diabetes Mellitus*, by Elliott P. Joslin (*BOS. MED. AND SURG. JOUR.*, June 22, 1922), are available and may be procured by applying at this office. Price 50c.

BOSTON MED. AND SURG. JOURNAL.
126 Mass. Ave., Boston.

REPORTED TO MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH
WEEK ENDING JULY 29, 1922

| Disease | No. of Cases | Disease | No. of Cases |
|---|--------------|----------------------------|--------------|
| Anterior poliomyelitis | 8 | Pneumonia, lobar | 22 |
| Chicken-pox | 14 | Scarlet fever | 49 |
| Diphtheria | 72 | Septic sore throat | 2 |
| Dog-bite requiring anti-rabic treatment | 8 | Syphilis | 32 |
| Epidemic cerebrospinal meningitis | 5 | Suppurative conjunctivitis | 2 |
| German measles | 5 | Trachoma | 3 |
| Gonorrhea | 94 | Tuberculosis, pulmonary | 158 |
| Measles | 144 | Tuberculosis, other forms | 13 |
| Mumps | 38 | Typhoid | 29 |
| Ophthalmia neonatorum | 9 | Whooping cough | 97 |